

**PSEG NUCLEAR L.L.C.
SALEM/OPERATIONS**

S1.OP-AR.ZZ-0001(Q) REV. 47

OVERHEAD ANNUNCIATORS WINDOW A

-
- ◆ Biennial Review Performed: Yes No
 - ◆ DCP Packages and Affected Document Numbers incorporated into this revision: None
 - ◆ OTSC(s) incorporated into this revision: None
 - ◆ OPEX(s) incorporated into this revision: None
-

REVISION SUMMARY:

1. Pg. 19, A-6, RMS HI RAD or TRBL:
 - ◆ 3.15 NOTE - Added note to alert personnel that movement of spent fuel casks in Fuel Handling Building may cause 1R5 and 1R9 to alarm. **(80100833)**
 - ◆ 3.15 - Added step to direct personnel to go to S1.OP-AB.RAD-0001(Q), Abnormal Radiation, should a 1R5 or 1R9 alarm occur. This step is considered editorial in nature as previously approved in S2.OP-AR.ZZ-0001(Q).
3. Pg. 25, A-9, ANNUN TRBL, 3.2 - Added procedure reference for performing a lamp check. This change is considered editorial in nature as previously approved in S2.OP-AR.ZZ-0001(Q) **(80076277)**

IMPLEMENTATION REQUIREMENTS

Effective Date: 08/13/2010

- ◆ None

OVERHEAD ANNUNCIATORS WINDOW A

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A

ANNUN		TEST / TROUBLE ALARMS					MISC	FIRE PROTECTION	
1	ANNUN PWR FAIL	2	3	4	5	6	7	8	
●	SPRAY COMPR CH I UNSAFE	SPRAY COMPR CH I ON TEST	RX PROT CH I ON TEST ●	NIS CH ON TEST	RMS HI RAD OR TRBL ●	FIRE PROT FIRE	FIRE PROT CO ₂ /HALON DISCH		
9	ANNUN TRBL	10	11	12	13	14	15	16	
●	SPRAY COMPR CH II UNSAFE	SPRAY COMPR CH II ON TEST	RX PROT CH II ON TEST ●	RPI ON TEST	ELEC PEN AREA AMB TEMP HI	FIRE PMP 1/2 RUN	FIRE PROT WTRFLO IN CNTMT		
17	ANNUN GND DET	18	19	20	21	22	23	24	
●	SPRAY COMPR CH III UNSAFE	SPRAY COMPR CH III ON TEST	RX PROT CH III ON TEST ●	213 PNL DOOR OPEN	SOUTH PEN AREA AMB TEMP HI	FIRE PMP 1/2 TRBL	FIRE PROT WTRFLO IN 1/2 AUX BLDG		
25	AUX ALM SYS PWR FAILURE	26	27	28	29	30	31	32	
●	SPRAY COMPR CH IV UNSAFE	SPRAY COMPR CH IV ON TEST	RX PROT CH IV ON TEST ●	SEC 1A-1C TEST OR TRBL ●	CROSSFLOW TROUBLE	FIRE PROT WTR PRESS LO	FIRE PROT 28VDC LOSS		
33	AUX ALM SYS TRBL	34	35	36	37	38	39	40	
●	SSPS TRN A TRBL ●	SSPS TRN A ON TEST	AMSAC BYPASSED	SEIS RCDR SYS ACT	MMIS IMPACT	FIRE PROT CO ₂ PRESS HI OR LO	FIRE PROT WTR PRESS HI OR LO		
41	AUX ALM SYS PRINTER	42	43	44	45	46	47	48	
●	SSPS TRN B TRBL ●	SSPS TRN B ON TEST	AMSAC TEST OR TRBL	RMS CH TEST	CMPTER FAIL	FIRE PROT TRBL	FIRE PROT TRBL		

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<p>ALARM</p> <p>A-1</p>	<p>1</p> <p>ANNUN PWR FAIL</p> 
<p>DEVICES: N/A</p> <p>SETPOINT: N/A</p>	
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Any:</p> <p style="padding-left: 40px;">A. Loss of Annunciator AC power supply</p> <p style="padding-left: 40px;">B. Annunciator Internal Power Supply Failure</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p>	
<p><u>NOTE</u></p> <p>◆ RCW Computer, Printer, OHA TROUBLE, console alarm, Operator panel, Annunciator CRT, CRT Modem, Console Port 0 Printers and Code Activated Switch receive power from 11 MAC. Remaining System have redundant circuits or automatically transfer to redundant power sources.</p> <p>◆ SER transferring from PRIMARY to BACKUP Controller, or back again, will cause all currently alarming OHA Windows to undergo a FLASHING/OFF/REFLASH evolution. This is normal and does not affect OHA operability.</p>	
<p>2.1 None</p> <p>3.0 <u>OPERATOR ACTIONS:</u></p> <p>3.1 <u>IF AT ANY TIME</u> it is determined that annunciators or annunciator peripherals have lost power, <u>THEN MAINTAIN</u> Plant Conditions stable as directed by the SM/CRS.</p>	
<p>Page 1 of 4</p>	
<p>A-1</p>	

3.2 IF Annunciator CRT (Console), Printer, Annunciator CRT modem in Cab. 72-1, Annunciator CRT modem in 1CC1, Annunciator Electronic Display Unit (mounted underneath CRT) in 1CC1, are deenergized,
THEN RESTORE Computer Point monitoring by:

A. IF Console CRT is dark,
AND Console CRT modem indicating lights are not lit,
THEN:

1. **UNPLUG** CRT AND CRT Electronic Display Unit modem (inside 1CC1), AND PLUG into any available 120VAC outlet.
2. Notify Maintenance Dept. to **CHECK/REPLACE** fuse FA9 (Rear of Cab. 73-1).

B. IF printer (Cab. 115-5) is de-energized,
THEN:

1. **UNPLUG** printer from normal location AND PLUG into an available 120VAC outlet.
2. **MONITOR** printer (instead of CRT), to determine CRT points when alarm received.
3. **NOTIFY** Maintenance Dept. to check/replace fuse FA8 (Rear of Cab. 73-1).

3.3 **DETERMINE** SER point in alarm using CRT or OHA Printer:

<u>SER Point</u>	<u>Description</u>
1	Annunciator Main AC Power Feed Failure
10	Annunciator Internal Power Failure
11	Overhead Annunciator TRBL Alarm Power Failure

3.4 IF CRT Point 1 is in alarm,
THEN send an Operator to **CHECK** the status of 11MAC-17S, CONTROL ROOM OVERHEAD ANNUN SOURCE (Normal) AND 14MAC-1S, INCOMING FEED OVERHEAD ANNUN SYSTEM (Backup).

A. IF either of the above sources are lost and cannot be restored,
THEN INITIATE a Notification to correct the cause of the alarm.

3.5 IF CRT Point 10 is in alarm,
THEN:

- A. **CHECK** status of four +5VDC, two +12VDC, and two -12VDC red lights for SER Logic Power Supply cards at front panel (Cab. 116-1).
- B. IF any Logic Power Supply lights are off,
THEN ENSURE PS toggle switch for affected card, (in back of Cab. 116-1) ON.
- C. **CHECK** status of LEDs on power supplies (in Cab. 72-1).

CAUTION

Loss of any two Logic Power Supplies listed below will result in inoperable Windows.

- ◆ **If +5VDC power supplies for both PS1 and PS2 are deenergized, Scanners 9 through 11 will be inoperable and SER microprocessors will be lost disabling entire system.**
- ◆ **If +5VDC power supplies for both PS7 and PS8 are deenergized, Scanners 1 through 8 will be inoperable.**
- ◆ **If both +12VDC power supplies are deenergized, all OHA Windows, Printer, console CRT, and RCW will be inoperable. (Historical Buffer will still process data).**
- ◆ **If both -12VDC power supplies are deenergized, all OHA Windows, Printer, console CRT, and RCW will be inoperable. (Historical Buffer will still process data).**
- ◆ **If both +24VDC power supplies for a single windowbox are deenergized, the affected windowbox and all subsequent windowboxes on communication path will be inoperable.**
- ◆ **Loss of both 1A Primary and 1B Backup power supplies will cause the following logic panels to be inoperable: 0/1, 2/3, 4/5, 6/7, 8/9 and 10/11 (Window Boxes A, B, C, D, E and G)**

(Caution Continued)

CAUTION (Continued)

- ◆ **Loss of both 2A Primary and 2B Backup power supplies will cause 24VDC Annunciator Response Pushbutton circuitry and the following logic panels to be inoperable: 12/13, 14/15, 16/17, 18,19 and 20/21 (Window Boxes H, I, J, K and F)**
- ◆ **Loss of both LEDs for an individual logic panel will cause associated window box to be inoperable.**

3.5 (Continued)

- D. **ENSURE** power fail LEDs are illuminated for each windows logic panel (Front AND Rear of Cab. 124-1, 117-1 and 118-1).
- E. **ENSURE** power fail LEDs are illuminated for the 24VDC OHA Control Console Pushbutton Circuitry relay panel (Cab. 117-1 F1, F2, F3, F4 and F5).
- F. IF any condition of the preceding cautions exist,
THEN:
 1. **DETERMINE** which OHA Windows are affected
IAW S1.OP-SO.ANN-0001(Q), Overhead Annunciators Operation.
 2. **NOTIFY** the SM/CRS to refer to the ECG.
 3. **MAINTAIN** Plant Conditions stable.
 4. **INITIATE** a Notification to determine and correct cause of power failure alarm.

3.6 IF CRT Point 11 is in alarm,
THEN initiate a Notification to **CHECK/REPLACE** 1-73-1-FA10, OHA PANEL 73-1 FUSE FA10, located in rear of Cab. 73-1.

ALARM A-2	2 SPRY COMPR CH I UNSAFE
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 At Rack #4, Bistable Switch 1BS-948G in BYPASS position (up), with Test switch 1CT-948D in NORMAL (down), (inner door closed).	
2.0 AUTOMATIC ACTION: 2.1 None	
3.0 OPERATOR ACTIONS:	
NOTE	
This alarm indicates Containment Pressure Channel output has been removed from Spray Coincidence Logic. This changes logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> alarm is momentary during maintenance or testing, <u>THEN</u> no further action is required.	
3.2 <u>IF</u> alarm persists during testing, <u>THEN NOTIFY</u> Maintenance that an improper switch lineup exists.	
3.3 <u>IF</u> no maintenance or testing in progress, <u>THEN:</u>	
A. OBSERVE position of Bistable Switch 1BS-948G in Rack #4. (NORMAL position is down.)	
B. NOTIFY Maintenance to investigate and correct cause of alarm.	
3.4 REFER to Technical Specifications.	
Page 1 of 1 A-2	
References: Dwg. 220026	

ALARM A-3	3 SPRY COMPR CHI ON TEST
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 At Rack #4, Bistable Switch 1BS-948G in BYPASS position (up)	
2.0 AUTOMATIC ACTION: 2.1 None	
3.0 OPERATOR ACTIONS:	
<u>NOTE</u>	
This alarm indicates Containment Pressure Channel output has been removed from Spray Coincidence Logic. This changes logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> maintenance or testing in progress, <u>THEN ENSURE</u> alarm clears when testing complete.	
3.2 <u>IF</u> no maintenance or testing is in progress, <u>THEN:</u>	
A. OBSERVE position of Bistable Switch 1BS-948G in Rack #4 (NORMAL position is down).	
B. NOTIFY Maintenance to investigate and correct cause of alarm.	
3.3 REFER to Technical Specifications.	
Page 1 of 1	
A-3	
References: Dwg. 220026	

6.3 IF no maintenance or testing is in progress,
THEN send an Operator to Racks 1 through 5 to **DETERMINE** exact source of alarm.

A. IF door open,
THEN CLOSE door AND ENSURE alarm clears.

B. IF Channel in test,
THEN:

1. **NOTIFY** Maintenance to restore channel to operation
IAW appropriate procedure.
2. **REFER** to Technical Specifications.

ALARM A-5	5 NIS CH ON TEST
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Any Nuclear Instrument Channels in test: A. Source Range - N31, N32 B. Intermediate Range - N35, N36 C. Power Range - N41, N42, N43, N44 D. Startup Rate - N37 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 <u>IF</u> maintenance or testing in progress, <u>THEN ENSURE</u> alarm clears when testing complete. 3.2 <u>IF</u> no maintenance or testing in progress, <u>THEN:</u> A. NOTIFY Maintenance to investigate and correct cause of alarm. B. REFER to Technical Specifications.	
Page 1 of 1 A-5	
References: Dwg. 218829	

<p>ALARM</p> <p>A-6</p>	<p>6</p> <p>RMS HI RAD OR TRBL</p>						
<p>DEVICES: N/A</p> <p>SETPOINT: N/A</p>							
<p>1.0 CAUSE(S):</p> <p>1.1 Any High Radiation Alarm - Area/Process/Filter Monitor</p> <p>1.2 Any Radiation Alert/Trouble</p> <p>1.3 1R1B channel trouble</p>							
<p>NOTE</p> <p>1R1B has two channels (1R1B-1 located in Unit 1 Control Room Intake Duct and 1R1B-2 located in Unit 2 Control Room Intake Duct). Either channel will cause the overhead alarm. The operator should review the Annunciator CRT and 1R1B Radiation Monitor Control Panel (South Wall of Rack Room) to determine which channel caused the alarm and to determine which intake duct is affected.</p>							
<p>2.0 AUTOMATIC ACTION:</p> <p>2.1 High alarm:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; vertical-align: top;">A.</td> <td style="width: 25%; vertical-align: top;">1R1B-1</td> <td style="vertical-align: top;">Control Room Ventilation shifts to ACCIDENT PRESSURIZED mode (both units). CREACS suction aligns to Unit 2 Control Room intake duct. Annunciator CRT point 687, Unit 1 Control Room Intake Duct CH 1 1R1B Alarm, actuates.</td> </tr> <tr> <td style="vertical-align: top;">B.</td> <td style="vertical-align: top;">1R1B-2</td> <td style="vertical-align: top;">Control Room Ventilation shifts to ACCIDENT PRESSURIZED mode (both units). CREACS suction aligns to Unit 1 Control Room intake duct. Annunciator CRT point 448, Unit 2 Control Room Intake Duct CH 2 1R1B Alarm, actuates.</td> </tr> </table> <p>(Continued)</p>		A.	1R1B-1	Control Room Ventilation shifts to ACCIDENT PRESSURIZED mode (both units). CREACS suction aligns to Unit 2 Control Room intake duct. Annunciator CRT point 687, Unit 1 Control Room Intake Duct CH 1 1R1B Alarm, actuates.	B.	1R1B-2	Control Room Ventilation shifts to ACCIDENT PRESSURIZED mode (both units). CREACS suction aligns to Unit 1 Control Room intake duct. Annunciator CRT point 448, Unit 2 Control Room Intake Duct CH 2 1R1B Alarm, actuates.
A.	1R1B-1	Control Room Ventilation shifts to ACCIDENT PRESSURIZED mode (both units). CREACS suction aligns to Unit 2 Control Room intake duct. Annunciator CRT point 687, Unit 1 Control Room Intake Duct CH 1 1R1B Alarm, actuates.					
B.	1R1B-2	Control Room Ventilation shifts to ACCIDENT PRESSURIZED mode (both units). CREACS suction aligns to Unit 1 Control Room intake duct. Annunciator CRT point 448, Unit 2 Control Room Intake Duct CH 2 1R1B Alarm, actuates.					
<p>Page 1 of 8</p> <p>A-6</p>							

2.1 (Continued)

C.	1R5/9	FHB Exh Vent, Shifts # 12 Filter Unit
D.	1R11A	Containment Ventilation Isolation
E.	1R12A/B	Containment Ventilation Isolation
F.	1R17A/B	Closes CC Surge Tank Vent Valve 1CC149
G.	1R18	Closes 1WL51, Liq Wst Disch Valve
H.	1R19A/B/C/D	Any 1R19 high alarm closes 11-14GB4, 11-14GB10, 1GB50, and 11-14GB185.
I.	1R36	Closes Htg Stm Cond Vlvs 1HS49, 1HS293, & SV 1055
J.	1R41D	Cntmt Vent Isol, closes 1WG41, and bypasses "Environmental Sampler" on 1R45 skid
K.	All others	Alarm only, no automatic action

2.2 Alert:

A.	1R1B-1	Annunciator CRT point 691, Unit 1 Control Room Intake Duct CH 1 1R1B Warn, actuates.
B.	1R1B-2	Annunciator CRT point 487, Unit 2 Control Room Intake Duct CH 2 1R1B Warn, actuates.

2.3 Trouble:

- | | | |
|----|-------------|---|
| A. | 1R1B-1 | Annunciator CRT point 699, Unit 1 Control Room Intake Duct CH 1 1R1B Failure, actuates. |
| B. | 1R1B-2 | Annunciator CRT point 488, Unit 2 Control Room Intake Duct CH 2 1R1B Failure, actuates. |
| C. | 1R2/1R3 | Annunciator CRT point 317, Unit 1 1R2/3 Failure, actuates. |
| D. | 1R4/1R6A | Annunciator CRT point 319, Unit 1 1R4/1R6A Failure, actuates. |
| E. | 1R5 | Annunciator CRT point 325, Unit 1 1R5 Failure, actuates. |
| F. | 1R7/1R10A | Annunciator CRT point 322, Unit 1 1R7/1R10A Failure, actuates. |
| G. | 1R9 | Annunciator CRT point 311, Unit 1 1R9 Failure, actuates. |
| H. | 1R11A | Annunciator CRT point 384, Containment Particulate - CH 1R11A Failure, actuates. |
| I. | 1R12B | Annunciator CRT point 385, Containment Iodine - CH1R12B Failure, actuates. |
| J. | 1R12A | Annunciator CRT point 386, Containment Nobel Gas - CH 1R12A Failure, actuates. |
| K. | 1R15 | Annunciator CRT point 353, Unit 1 1R15 Failure, actuates. |
| L. | 1R17A | Annunciator CRT point 340, Unit 1 1R17A Failure, actuates. |
| M. | 1R17B | Annunciator CRT point 354, Unit 1 1R17B Failure, actuates. |
| N. | 1R18 | Annunciator CRT point 341, Unit 1 1R18 Failure, actuates. |
| O. | 1R19A | Annunciator CRT point 347, Unit 1 1R19A Failure, actuates. |
| P. | 1R19B/1R19D | Annunciator CRT point 332, Unit 1 1R19B/1R19D Failure, actuates. |
| Q. | 1R19C | Annunciator CRT point 342, Unit 1 1R19C Failure, actuates. |
| R. | 1R40 | Annunciator CRT point 310, Unit 1 1R40 Failure, actuates. |

3.0 **OPERATOR ACTIONS:****NOTE**

Acknowledging the alarm will set up A-6 to reflash on another input.

- 3.1 **DETERMINE** the affected channel from 1RP1, Radiation Monitoring Cabinets (75, 109, 110, 113, 114, 120, 136, and 158), or Annunciator CRT.
- 3.2 **IF** maintenance or testing is in progress,
THEN ENSURE the alarm clears when testing is complete.
- 3.3 **IF** the alarm is caused by 1R1B or 1R53 Detector Heater High Temperature Alarm,
THEN RESET IAW S1.OP-SO.RM-0001(Q),
Radiation Monitoring Systems Operation.
- 3.4 **IF** 1R53A/B/C/D Alarm Annunciator Alarms,
THEN NOTIFY Radiation Protection to perform SC.RP-TI-RM-0607(Q),
AND REFER to S1.OP-AB.SG-0001(Q), Steam Generator Tube Leak.
- 3.5 **IF** the 1R15 **OR** any R19 channel is alarming,
THEN GO TO S1.OP-AB.SG-0001(Q), Steam Generator Tube Leak.
- 3.6 **IF** 1R1B-1 (Unit 1 Control Room Intake Duct) is the cause of the alarm
AND high radiation is indicated,
THEN GO TO S1.OP-AB.RAD-0001(Q), Abnormal Radiation.
- 3.7 **IF** 1R1B-2 (Unit 2 Control Room Intake Duct) is the cause of the alarm
AND high radiation is indicated,
THEN NOTIFY Unit 2 Control Room to initiate S2.OP-AB.RAD-0001(Q), Abnormal
Radiation.
- 3.8 **IF** any R53 **AND** corresponding R19 channel is inoperable,
THEN NOTIFY Chemistry to initiate preplanned Primary to Secondary Leak samples.
- 3.9 **IF** 1R31 is in alarm
THEN REFER TO S1.OP-AB.RAD-0001(Q), Abnormal Radiation
AND S1.OP-AB.RC-0002(Q), High Activity in the Reactor Coolant System,
as directed by the SM/CRS.

(Continued)

NOTE

The RM 2000 monitor is inoperable when the NORM (green) light is extinguished.

3.10 IF 1R1B-1 OR 1R1B-2 is failed/inoperable,
AND the second detector in the intake duct (as shown below) is OPERABLE,

◆ 2R1B-2 in Unit 1 Control Room Intake Duct

OR

◆ 2R1B-1 in Unit 2 Control Room Intake Duct

THEN:

- A. IF the channel appears to be failed,
THEN PERFORM a Source Check IAW S1.OP-ST.RM-0001(Q),
Radiation Monitors - Source Check.
- B. **REFER** to Technical Specifications.

3.11 IF both Control Room intake duct detectors (as shown below) are failed/inoperable,

◆ 1R1B-1 AND 2R1B-2 in Unit 1 Control Room Intake Duct,

OR

◆ 2R1B-1 AND 1R1B-2 in Unit 2 Control Room Intake Duct,

AND both CREACS filtration trains are OPERABLE,

THEN:

- A. IF a channel appears to be failed,
THEN PERFORM a Source Check IAW S1.OP-ST.RM-0001(Q),
Radiation Monitors - Source Check.
- B. **REFER** to Technical Specifications.
- C. IF both channels remain failed/inoperable,
THEN coordinate with the Unit 2 NCO to,
INITIATE Control Room Ventilation System ACCIDENT PRESSURIZED
mode IAW S1/S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation,
from the Unit with the inoperable detectors.

(Continued)

3.12 IF both detectors in a Control Room intake duct are failed/inoperable: [C0661]

◆ 1R1B-1 AND 2R1B-2 in Unit 1 Control Room Intake Duct,

OR

◆ 2R1B-1 AND 1R1B-2 in Unit 2 Control Room Intake Duct,

AND either Unit is aligned for single train CREACS operation IAW Tech Spec 3.7.6.1.a (Unit 1) or Tech Spec 3.7.6.a (Unit 2),

AND testing is not in progress on either of the channels,

THEN:

- A. IF a channel appears to be failed,
THEN PERFORM a Source Check IAW S1.OP-ST.RM-0001(Q),
Radiation Monitors - Source Check.
- B. **REFER** to Technical Specifications.
- C. IF both channels remain failed/inoperable,
THEN:
1. IF both units are in Mode 1-4,
THEN:
 - a. **SELECT** a Unit for shutdown.
 - b. **INITIATE** ACCIDENT PRESSURIZED mode on the unit that will remain in operation IAW S1(2).OP-SO.CAV-0001(Q),
Control Area Ventilation Operation.
 - c. **PLACE** the Unit selected for shutdown in Hot Standby within 6 hrs,
AND in Cold Shutdown within the following 30 hours.
 2. IF only one unit is in Mode 1-4,
THEN INITIATE ACCIDENT PRESSURIZED mode on that unit IAW S1(2).OP-SO.CAV-0001(Q), Control Area Ventilation Operation.
 3. IF both units are in Modes 5, 6, or Defueled,
THEN INITIATE ACCIDENT PRESSURIZED mode IAW S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation.

(Continued)

- 3.13 IF alarm is due to 1R41D,
AND high radiation is indicated,
THEN GO TO S1.OP-AB.RAD-0001(Q), Abnormal Radiation.
- 3.14 IF 1R41D indicates failed,
THEN:
- A. **EVALUATE** Technical Specification 3.3.3.1,
AND ODCM 3.3.3.9 for applicability.
 - B. **NOTIFY** Maintenance to investigate.
 - C. IF it is desired to block the 1R41D channel output,
THEN BLOCK the 1R41D channel output IAW S1.OP-SO.RM-0001(Q),
Radiation Monitoring Systems Operation.
 - D. When Maintenance determines the 1R41D is operating properly:
 1. IF the 1R41D channel output is blocked,
THEN RESTORE the 1R41D channel output to NORMAL
IAW S1.OP-SO.RM-0001(Q), Radiation Monitoring Systems Operation.
 2. **EVALUATE** Technical Specification 3.3.3.1,
AND ODCM 3.3.3.9 for continued applicability.

NOTE

Movement of spent fuel casks in the Fuel Handling Building may cause 1R5 or 1R9 to alarm.

- 3.15 IF 1R5 OR 1R9 indicate HI RADIATION OR TROUBLE,
THEN GO TO S1.OP-AB.RAD-0001(Q), Abnormal Radiation.
- 3.16 IF alarm is due to 1R13A/B,
AND high radiation is indicated,
THEN GO TO S1.OP-AB.RAD-0001(Q), Abnormal Radiation.

- 3.17 IF 1R13A/B indicates failed,
THEN:
- A. **EVALUATE** ODCM 3.3.3.8 for applicability.
 - B. **NOTIFY** Maintenance to investigate.
 - C. When Maintenance determines the 1R13A/B is operating properly,
EVALUATE ODCM 3.3.3.8 for continued applicability.
- 3.18 IF any APTEC/NRC (ADM-606) monitor alarms and displays the following failure messages:
- ◆ ROM Test Failure
 - ◆ Power Down Halt Failure
 - ◆ Background Inactive Failure
- THEN:
- A. **RESET** the alarm by cycling the power OFF and ON using the key switch.
 - B. IF the failure message fails to clear or alarms again,
THEN INITIATE a notification to investigate and repair the monitor.
- 3.19 IF any other monitor has a valid alarm,
THEN GO TO S1.OP-AB.RAD-0001(Q), Abnormal Radiation.

NOTE

Radiation Monitor 1R1B should be reset IAW S1.OP-SO.RM-0001(Q),
Radiation Monitoring Systems Operation.

- 3.20 WHEN alarm condition on the radiation monitor clears,
THEN OBTAIN permission from the CRS
AND RESET the alarming radiation monitor.

References: Dwg. 222891, 222892, 222893, 222895, 242815, 618617, 618620, and
S-C-ANN-ECS-0114

ALARM A-7	7 FIRE PROT FIRE
DEVICES: N/A	
SETPOINT: N/A	
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Any:</p> <p style="padding-left: 40px;">A. Coded fire alarm</p> <p style="padding-left: 40px;">B. Fire alarm on 1RP5</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p> <p>2.1 None</p> <p>3.0 <u>OPERATOR ACTIONS:</u></p> <p>3.1 SCAN 1RP5 to determine Fire Zone, Area, and Elevation <u>OR DETERMINE</u> location IAW Alarm Code List on next page.</p> <p>3.2 <u>IF AT ANY TIME</u>, fire indication for both Zones 59 and 72 on 1RP5 are received, OPEN 1FP147, CNTMT ISOL VLV.</p> <p>3.3 NOTIFY the Emergency Services Department.</p> <p>3.4 <u>IF</u> alarm is valid, <u>THEN GO TO</u> S1.OP-AB.FIRE-0001(Q), Control Room Fire Response.</p> <p>3.5 <u>IF</u> alarm invalid, <u>THEN ANNOUNCE</u> "Attention all personnel, disregard Unit 1 fire alarm".</p>	
(Continued)	
Page 1 of 2	A-7

Alarm Code List

1-1-1	FIRE PUMP HOUSE & HTD BLR	1-6-5	AUX BLDG - DIESEL AREA - 100' ELEV
1-1-2	GUARD HOUSE	1-7-1	AUX BLDG-TRUCK LOADING AREA
1-1-3	#11 & 12 STA PWR TRANSFORMERS	1-7-2	SERVICE WATER INTAKE AREA
1-1-4	MAIN & AUX TRANSFORMERS	1-7-3	CIRCULATING WATER INTAKE AREA
1-1-5	ADMINISTRATION BLDG - 100' ELEV	1-7-4	FUEL OIL STORAGE AREA
1-1-6	ADMINISTRATION BLDG - 122' ELEV	2-1-3	#21 & 22 STA PWR TRANSFORMERS
1-2-1	TURBINE GEN AREA - 88' ELEV	2-1-4	MAIN & AUX TRANSFORMERS
1-2-2	TURBINE GEN AREA - 100' ELEV	2-2-1	TURBINE GEN AREA - 88' ELEV
1-2-3	TURBINE GEN AREA - 122' ELEV	2-2-2	TURBINE GEN AREA - 100' ELEV
1-2-4	TURBINE GEN AREA - 140' ELEV	2-2-3	TURBINE GEN AREA - 122' ELEV
1-3-1	SERVICE BLDG - 88' ELEV	2-2-4	TURBINE GEN AREA - 140' ELEV
1-3-2	SERVICE BLDG - 100' ELEV	2-3-6	CONTROLLED FACILITIES BUILDING
1-3-3	SERVICE BLDG - 113' ELEV	2-4-1	ELEC & PIPE PEN AREA - 78' ELEV
1-3-4	SERVICE BLDG - 127' ELEV	2-4-2	MECH PENETRATION AREA - 78' ELEV
1-3-6	CLEAN FACILITIES BUILDING	2-4-3	ELEC & MECH PENT AREA - 100' ELEV
1-4-1	ELEC PENETRATION AREA - 78' ELEV	2-4-5	REACTOR CONTAINMENT
1-4-2	MECH PENETRATION AREA - 78' ELEV	2-4-6	FUEL HANDLING BUILDING
1-4-3	ELEC & MECH PENT AREA - 100' ELEV	2-5-1	AUX BLDG - SWGR RM - 64' ELEV
1-4-5	REACTOR CONTAINMENT	2-5-2	AUX BLDG - SWGR RM - 84' ELEV
1-4-6	FUEL HANDLING BUILDING	2-5-3	AUX BLDG - REL & BAT RMS - 100' ELEV
1-5-1	AUX BLDG - SWGR RM - 64' ELEV	2-5-4	AUX BLDG - CONTROL AREA - 122' ELEV
1-5-2	AUX BLDG - SWGR RM - 84' ELEV	2-5-5	AUX BLDG - 45' & 55' ELEV
1-5-3	AUX BLDG - REL & BAT RMS - 100' ELEV	2-5-6	AUX BLDG - 64' ELEV
1-5-4	AUX BLDG - CONTROL AREA - 122' ELEV	2-6-1	AUX BLDG - 84' ELEV
1-5-5	AUX BLDG - 45' & 55' ELEV	2-6-2	AUX BLDG - 100' ELEV
1-5-6	AUX BLDG - 64' ELEV	2-6-3	AUX BLDG - 122' ELEV
1-6-1	AUX BLDG - 84' ELEV	2-6-4	AUX BLDG - DIESEL AREA - 84' ELEV
1-6-2	AUX BLDG - 100' ELEV	2-6-5	AUX BLDG - DIESEL AREA - 100' ELEV
1-6-3	AUX BLDG - 122' ELEV	2-8-1	SERVICE WATER PIPE TUNNEL
1-6-4	AUX BLDG - DIESEL AREA - 84' ELEV		

ALARM A-8	8 FIRE PROT CO ₂ /HALON DISCH
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Smoke or Fire Detection System has caused CO ₂ or Halon Discharge. 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 Scan 1RP5 to DETERMINE Fire Zone, Area, and Elevation. 3.2 NOTIFY the Emergency Services Department. 3.3 <u>IF</u> alarm is valid, <u>THEN GO TO</u> S1.OP-AB.FIRE-0001(Q), Control Room Fire Response. 3.4 <u>IF</u> alarm invalid, <u>THEN ANNOUNCE</u> "Attention all personnel, disregard Unit 1 fire alarm".	
Page 1 of 1	
References: Dwg. 203753	

A-8

<p>ALARM</p> <p>A-9</p>	<p>9</p> <p>ANNUN TRBL</p> 
<p>DEVICES: N/A</p> <p>SETPOINT: N/A</p>	
<p>1.0 CAUSE(S):</p> <p>1.1 Logic Failure in one or more of 11 Logic A Cards or 11 redundant Logic B Cards of Annunciator System</p> <p>1.2 Diagnostic Test Failure of SER A or SER B</p> <p>1.3 OHA Trouble detected by the Annunciator Verification System (AVS).</p> <p>1.4 Annunciator Verification System PLC Trouble/Failure</p> <p>2.0 AUTOMATIC ACTION:</p> <p>2.1 Logic A Card(s) only: None</p> <p>2.2 Logic B Card(s) only: None</p> <p>2.3 Logic A <u>AND</u> B Cards: Loss of multiple Overhead Alarms (exactly which depends on specific Cards lost)</p> <p>2.4 SER A Fail Over to B, SW #1: SER transfer from A to B SER A Fail Over to B, SW #2: SER transfer from A to B Self Test Failure on SER A: None Clock Synch Failure on SER A: None Functional Test Fail SER B: None Self Test Failure on SER B: None Port 4 Trouble on SER B: None Watchdog Timer Fail on SER B: None Functional Test Fail on SER A: None OHA Trouble Detected by AVS: None AVS PLC Trouble: None</p> <p>(Continued)</p>	
<p>Page 1 of 3</p>	
<p>A-9</p>	

3.0 **OPERATOR ACTIONS:**3.1 **DETERMINE** source of alarm from Annunciator CRT or OHA Printer.

<u>CRT Point</u>	<u>Description</u>
54	Logic Board 4/5 (Lamp Box C) Error Detected
60	Logic Board 6/7 (Lamp Box D) Error Detected
62	Logic Board 8/9 (Lamp Box E) Error Detected
73	Logic Board 10/11 (Lamp Box G) Error Detected
76	Logic Board 12/13 (Lamp Box H) Error Detected
81	Logic Board 14/15 (Lamp Box J) Error Detected
82	Logic Board 16/17 (Lamp Box K) Error Detected
83	Logic Board 18/19 (Lamp Box F Normal) Error Detected
84	Logic Board 20/21 (Lamp Box F Fst Out) Error Detected
92	OHA Fault detected by AVS
214	Overhead Annunciator Functional Test Fail SER B
216	Logic Board 2/3 (Lamp Box B) Error Detected
233	Overhead Annunciator Watchdog Timer Fail on SER B
239	Logic Board 0/1 (Lamp Box A) Error Detected
260	Overhead Annunciator Functional Test Fail SER A
357	Overhead Annunciator Self Test Failure on SER A
359	Overhead Annunciator Clock Synch Failure on SER A
362	Overhead Annunciator Self Test Failure on SER B
363	Overhead Annunciator RCW Port 4 Trouble on SER B
382	Overhead Annunciator SER A Fail Over to B, SW #1
383	Overhead Annunciator SER A Fail Over to B, SW #2
565	PLC Fault Detected by AVS

NOTE

An OHA lamp test simulates Logic Failure of the 11 Logic Panels which drive the Control Room Window boxes. A satisfactory lamp test ensures the OHA is functional.

3.2 **PERFORM** OHA Lamp Test IAW S1.OP-SO.ANN-0001(Q),
Overhead Annunciators Operation.

(Continued)

3.3 IF less than 3 OHA window boxes illuminate,
OR less than 3 Logic Board Error Detected alarms (CRT):

- ◆ Occur during test,
- ◆ Display on console CRT or printer,
- ◆ Clear after test is complete,

THEN GO TO S1.OP-AB.ANN-0001(Q), Loss of Overhead Annunciator System.

3.4 IF either CRT Point 382 or Point 383 alarms,
OR alarms AND returns to normal,
THEN:

- A. **OBTAIN** OHA manual transfer failover switch key.
- B. **PLACE** failover switch in MANUAL TRANSFER TO SER B position (Cabinet 72-1).
- C. **ENSURE** BACK UP LEDs (Cabinet 72-1) are illuminated.
- D. **PRESS** PB5-PLC FAULT DETECT RESET to clear AVS trouble alarm (Cabinet 124-1).

NOTE

If the OHA System has been manually transferred to SER B, then **FUNCTIONALLY TEST** only SER B.

3.5 IF OVERHEAD ANNUN TRBL (ICC1) AND OHA A-9 are illuminated, without an AVS ANNUN FAULT alarm (ICC1),
THEN PERFORM an OHA system lamp test to determine OHA lamp status.

3.6 **NOTIFY** Maintenance to perform their weekly OHA system procedure to investigate and correct cause of alarm.

ALARM A-10	10 SPRY COMPR CH II UNSAFE
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 At Rack #9, Bistable Switch 1BS-948C in BYPASS position (up), with CT switch 1CT-948C in NORMAL (down (inner door closed))	
2.0 <u>AUTOMATIC ACTION:</u> 2.1 None	
3.0 <u>OPERATOR ACTIONS:</u>	
<u>NOTE</u>	
This alarm indicates Containment Pressure Channel output has been removed from Spray Coincidence Logic. This changes logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> alarm is momentary during maintenance or testing, <u>THEN</u> no further action required.	
3.2 <u>IF</u> alarm persists during testing, <u>THEN</u> NOTIFY Maintenance that an improper switch lineup exists.	
3.3 <u>IF</u> no maintenance or testing is in progress, <u>THEN</u> :	
A. OBSERVE position of Bistable Switch 1BS-948C in Rack #9. (NORMAL position is down).	
B. NOTIFY Maintenance to investigate and correct cause of alarm.	
3.4 REFER to Technical Specifications.	
Page 1 of 1	
A-10	
References: Dwg. 220026	

ALARM A-11	11 SPRY COMPR CH II ON TEST
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 At Rack #9, Bistable Switch 1BS-948C in the BYPASS position (up)	
2.0 AUTOMATIC ACTION: 2.1 None	
3.0 OPERATOR ACTIONS:	
NOTE	
This alarm indicates Containment Pressure Channel output has been removed from Spray Coincidence Logic. This changes logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> maintenance or testing in progress, <u>THEN ENSURE</u> alarm clears when testing complete.	
3.2 <u>IF</u> no maintenance or testing is in progress, <u>THEN:</u>	
A. OBSERVE position of Bistable Switch 1BS-948C in Rack #9 (NORMAL position is down).	
B. NOTIFY Maintenance to investigate and correct cause of alarm.	
3.3 REFER to Technical Specifications.	
Page 1 of 1	
A-11	
References: Dwg. 220026	

3.3 IF no maintenance or testing in progress,
THEN send an Operator to Racks 6 through 10 to **DETERMINE** exact source of alarm.

A. IF door open,
THEN **CLOSE** door AND **ENSURE** alarm clears.

B. IF Channel in test,
THEN:

1. **NOTIFY** Maintenance to restore channel to operation
IAW appropriate procedure.
2. **REFER** to Technical Specifications.

ALARM A-13	13 RPI ON TEST
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Test Switch on Individual Rod Position Indication Module in TEST (Racks 42-1 through 45-1) 1.2 Control Bank D Individual Rod Position Indication Module is in OPERATE or TEST (Racks 43 and 44). These switches are normally in INHIBIT (inhibits linear compensation and temperature compensation). 1.3 Temp Comp Defeat switch (located in rear of R44) in DEFEAT 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 <u>IF</u> maintenance or testing in progress, <u>THEN ENSURE</u> alarm clears when testing complete. 3.2 <u>IF</u> no maintenance or testing is in progress, <u>THEN</u> notify Maintenance to INVESTIGATE cause of alarm.	
Page 1 of 1	A-13
References: Dwg. 226066	

ALARM	14
A-14	ELEC PEN AREA AMB TEMP HI
DEVICES: TD-8048, TD-8049, TD-8050, or TD-8051	
SETPOINT: 160°F	
1.0 <u>CAUSE(S)</u> :	
1.1 High ambient temperature (160°F) in the Inner Mechanical Penetration Area.	
2.0 <u>AUTOMATIC ACTION</u> :	
2.1 None	
3.0 <u>OPERATOR ACTIONS</u> :	
<u>NOTE</u>	
13 FAN auto starts at 80°F (TD8339). 14 FAN auto starts at 90°F (TD8340). Aux. Annunciator Pt 682, Inner Penetration Area Temp High will alarm at 100°F (TD8341).	
3.1 ENSURE 13 <u>AND</u> 14 MS Inner Mech Penetration Area Exhaust Fans are in AUTO on 1RP2.	
3.2 REFER to S1.OP-AB.STM-0001(Q), Excessive Steam Flow as directed by the SM/CRS.	
<u>CAUTION</u>	
Extreme caution should be taken when entering a space that may have a steam leak.	
3.3 Send an Operator to INVESTIGATE possible cause of high ambient temperature (160°F) conditions.	
Page 1 of 1	
A-14	
References: S-C-MS-MEE-0779, 205248, 231413, 231408, 233666, 233668	

ALARM A-15	15 FIRE PMP 1/2 RUN
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 Start of #1 or #2 Fire Pump 2.0 AUTOMATIC ACTION:	
NOTE #1 Fire Pump should start at 85 psig system header pressure, or on loss of normal and emergency power to the battery chargers. #2 Fire Pump should start at 75 psig system header pressure, or loss of normal and emergency power to the battery chargers.	
2.1 None 3.0 OPERATOR ACTIONS: 3.1 SCAN for any additional alarms on 1RP5 <u>AND</u> Annunciator Window A. 3.2 <u>IF</u> there are other fire protection alarms on Window A, <u>THEN RESPOND</u> to those alarms. 3.3 <u>IF</u> alarm due to testing, <u>THEN</u> no further action is required. 3.4 <u>IF</u> alarm not due to testing, <u>THEN NOTIFY</u> the Emergency Services Department. 3.5 <u>IF</u> an increase in RHR Sump Pump runs are observed concurrent with this alarm, <u>THEN DISPATCH</u> an Operator to 11 <u>AND</u> 12 RHR Pump Rooms to check for flooding. 3.6 <u>IF</u> flooding in a RHR Pump Room is identified, <u>THEN UNLOCK AND CLOSE</u> 1FP132, FP HOSE REEL HDR IV (SFP HX area) <u>AND NOTIFY</u> the Emergency Services Department that 1FP132 is CLOSED.	
Page 1 of 1	
A-15	
References: Dwg. 203776	

ALARM A-16	16 FIRE PROT WTRFLO IN CNTMT
DEVICES: FD-8358 SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Fire Protection Water Flow in Containment as sensed by FD-8358 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 Attempt to DETERMINE validity of alarm as follows: ◆ The presence or absence of other indications: ◆ Coded Fire Alarms ◆ Annunciators A-7 <u>AND</u> A-15 ◆ Zone indications on 1RP5 ◆ Local observation of either a fire or an FPS actuation 3.2 <u>IF</u> alarm is due to testing in progress, <u>THEN</u> no further action is required. 3.3 NOTIFY the Emergency Services Department of alarm. 3.4 <u>IF</u> alarm is valid, <u>THEN GO TO</u> S1.OP-AB.FIRE-0001(Q), Control Room Fire Response. (Continued)	
Page 1 of 2	A-16

3.5 IF alarm is invalid,
THEN:

A. IF 1FP147, FIRE PROTECTION CONTAINMENT ISOL, is open, THEN:

1. **CLOSE** 1FP147, CNTMT ISOL VLV
2. **MAKE** a Containment entry to assess any damage.
3. Initiate efforts to **REMOVE** water from Containment Sump.

B. IF 1FP147 is closed,
THEN:

1. **CLOSE** 1FP186 AND 1FP187, FP AUX BLDG ISOL VLV CLS at 1RP5.
2. **NOTIFY** Unit 2 Control Room AND Emergency Services Department that 1FP186 and 1FP187 are closed.
3. Send an Operator to **DETERMINE** if a pipe rupture exists between Flow Detector and 1FP147.

a. IF a rupture exists,
THEN:

1. **ISOLATE** rupture.
2. **OPEN** 1FP186 AND 1FP187.

b. IF a rupture does not exist,
THEN:

1. **OPEN** 1FP186 AND 1FP187.
2. **NOTIFY** Maintenance to investigate and correct cause of alarm.

ALARM A-17	17 ANNUN GND DET 						
DEVICES: N/A SETPOINT: N/A							
1.0 CAUSE(S): 1.1 A ground on wiring from any of the following: A. Any of the DC field inputs to the Overhead Annunciator System B. Any of the inputs to the Console Group Annunciator System (Bezel alarms)							
2.0 AUTOMATIC ACTION:							
NOTE One ground detector monitors the DC Field Inputs to the Overhead Annunciator alarms and another detector monitors the inputs to the Console Group Alarm System (Bezel alarms). A single ground on either system should not have any effect on the affected alarms. If a second ground occurs on the same system, it may cause erroneous alarms, prevent a valid input from causing an alarm, or even blow a fuse and remove power from the field inputs. (The Field inputs to the Bezel alarms come from Alarm Relay contacts in the Bailey Cabinets.)							
2.1 None							
3.0 OPERATOR ACTIONS: 3.1 DETERMINE source of alarm as follows:							
<table border="0"> <thead> <tr> <th style="text-align: left;"><u>CRT Point</u></th> <th style="text-align: left;"><u>Description</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">18</td> <td>Annunciator Ground Detector - Overhead Annun System</td> </tr> <tr> <td style="text-align: center;">412</td> <td>Annunciator Ground Detector - Console Group Alarm Sys</td> </tr> </tbody> </table>	<u>CRT Point</u>	<u>Description</u>	18	Annunciator Ground Detector - Overhead Annun System	412	Annunciator Ground Detector - Console Group Alarm Sys	
<u>CRT Point</u>	<u>Description</u>						
18	Annunciator Ground Detector - Overhead Annun System						
412	Annunciator Ground Detector - Console Group Alarm Sys						
(Continued)							
Page 1 of 2							
A-17							

3.2 IF AT ANY TIME, any annunciators or annunciator auxiliary circuits are inoperable,
THEN:

A. **MAINTAIN** Plant Conditions stable.

B. **NOTIFY** the SM/CRS to refer to the ECG.

3.3 IF source of alarm is CRT Point 18,
THEN GO TO S1.OP-SO.ANN-0001(Q), Overhead Annunciators Operation.

3.4 IF source of alarm is CRT Point 412,
THEN INITIATE a Notification to determine and correct cause of alarm.

ALARM A-18	18 SPRY COMPR CH III UNSAFE
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 At Rack #12, Bistable Switch 1BS-948B in BYPASS position (up), with CT switch 1CT-948B in NORMAL (down (inner door closed)) 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u>	
<u>NOTE</u> This alarm indicates that the Containment Pressure Channel output has been removed from the Spray Coincidence Logic. This changes the logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> alarm is momentary during maintenance or testing, <u>THEN</u> no further action is required. 3.2 <u>IF</u> alarm persists during testing, <u>THEN NOTIFY</u> Maintenance that an improper switch lineup exists. 3.3 <u>IF</u> no maintenance or testing is in progress, <u>THEN:</u> A. OBSERVE position of Bistable Switch 1BS-948B in Rack #12. (NORMAL position is down.) B. NOTIFY Maintenance to investigate and correct cause of alarm. 3.4 REFER to Technical Specifications.	
Page 1 of 1	
A-18	
References: Dwg. 220026	

ALARM A-19	19 SPRY COMPR CH III ON TEST
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 At Rack #12, Bistable Switch 1BS-948B in BYPASS position (up)	
2.0 AUTOMATIC ACTION: 2.1 None	
3.0 OPERATOR ACTIONS:	
NOTE	
This alarm indicates that the Containment Pressure Channel output has been removed from the Spray Coincidence Logic. This changes the logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> maintenance or testing is being performed, <u>THEN ENSURE</u> alarm clears when testing is complete.	
3.2 <u>IF</u> no maintenance or testing is in progress, <u>THEN:</u>	
A. OBSERVE AND REPORT the position of Bistable Switch 1BS-948B in Rack #12 to the SM/CRS. (NORMAL position is down.)	
B. NOTIFY Maintenance to investigate the cause of the alarm.	
3.3 REFER to Technical Specifications.	
Page 1 of 1	
A-19	
References: Dwg. 220026	

ALARM A-20	20 RX PROT CH III ON TEST 						
DEVICES: N/A SETPOINT: N/A							
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Any of the following:</p> <p style="margin-left: 40px;">A. One or more of the doors of Racks 11, 12, or 13 are open (front or back).</p> <p style="margin-left: 40px;">B. Any Reactor Protection System Channel III Instrument Loop in test (Any Channel III CT Test switch in TEST)</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p> <p>2.1 None</p> <p>3.0 <u>OPERATOR ACTIONS:</u></p> <p>3.1 DETERMINE source of alarm from Annunciator CRT.</p> <table style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;"><u>CRT Point</u></th> <th style="text-align: left;"><u>Description</u></th> </tr> </thead> <tbody> <tr> <td>358</td> <td>RPS Channel III Rack 11, 12, or 13 Door Open</td> </tr> <tr> <td>356</td> <td>RPS Channel III Instrument Loop in Test</td> </tr> </tbody> </table> <p>3.2 <u>IF</u> maintenance or testing is being performed, <u>THEN ENSURE</u> alarm clears when testing is complete.</p> <p>(Continued)</p>		<u>CRT Point</u>	<u>Description</u>	358	RPS Channel III Rack 11, 12, or 13 Door Open	356	RPS Channel III Instrument Loop in Test
<u>CRT Point</u>	<u>Description</u>						
358	RPS Channel III Rack 11, 12, or 13 Door Open						
356	RPS Channel III Instrument Loop in Test						
Page 1 of 2							
A-20							

3.3 IF no maintenance or testing is in progress,
THEN send an Operator to Racks 11, 12 and 13 to **DETERMINE** source of alarm.

A. IF cause is an open door,
THEN CLOSE the door AND ENSURE alarm clears.

B. IF cause is a Channel in test,
THEN:

1. **NOTIFY** Maintenance to restore channel to operation
IAW appropriate procedure.
2. **REFER** to Technical Specifications.

ALARM A-21	21 213 PNL DOOR OPEN
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Door is open on: A. 11 Auxiliary Feedwater Pump Panel 205-1 B. 12 Auxiliary Feedwater Pump Panel 206-1 C. 13 Auxiliary Feedwater Pump Panel 207-1 D. Hot Shutdown Station Panel 213-1 E. Charging Pumps Flow and Pressure Panel 216-1 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 <u>IF</u> maintenance or testing is in progress, <u>THEN ENSURE</u> alarm clears when testing completed. 3.2 <u>IF</u> no maintenance or testing is in progress, <u>THEN:</u> A. Send an Operator to IDENTIFY AND CLOSE appropriate door. B. <u>IF</u> no door is open, <u>THEN NOTIFY</u> Maintenance to troubleshoot and repair door circuit. C. REFER to Technical Specifications.	
Page 1 of 1	
A-21	
References: Dwg. 217150	

ALARM A-22	22 SOUTH PEN AREA AMB TEMP HI
DEVICES: TD-8052, TD-8053, TD-8054, or TD-8055	
SETPOINT: 160°F	
1.0 <u>CAUSE(S)</u> : 1.1 High ambient temperature (160°F) in the Outer Mechanical Penetration Area.	
2.0 <u>AUTOMATIC ACTION</u> : 2.1 None	
3.0 <u>OPERATOR ACTIONS</u> :	
<u>NOTE</u>	
11 FAN auto starts at 80°F (TD8337). 12 FAN auto starts at 90°F (TD8336). Aux. Annunciator Pt 732, Outer Penetration Area Temp High will alarm at 100°F (TD8338).	
3.1 ENSURE 11 <u>AND</u> 12 Outer Mech Penetration Area Exhaust Fans are in AUTO on 1RP2.	
3.2 REFER to S1.OP-AB.STM-0001(Q), Excessive Steam Flow as directed by the SM/CRS.	
<u>CAUTION</u>	
Extreme caution should be taken when entering a space that may have a steam leak.	
3.3 Send an Operator to INVESTIGATE possible cause of high ambient temperature (160°F) conditions.	
Page 1 of 1	
A-22	
References: S-C-MS-MEE-0779, 205238, 231413, 231408, 233665, 233668	

ALARM A-23	23 FIRE PMP 1/2 TRBL
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 One or more of the following conditions for either #1 or #2 Fire Pump: A. Battery 1 Trouble B. Battery 2 Trouble C. Charger Failure D. Engine Over Temperature E. Low Oil Pressure F. Engine Fail to Start G. Engine Overspeed H. Fire Pump Main Switch not in AUTO 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 INITIATE S1.OP-AB.FP-0001(Q), Fire Protection System Malfunction.	
Page 1 of 1	
A-23	
References: Dwg. 203776	

ALARM

A-24

24

FIRE PROT
WTRFLO
IN 1/2
AUX BLDG

DEVICES: FD-8356, FD-8357

SETPOINT: N/A

1.0 CAUSE(S):

1.1 Fire Protection water flow in Unit 1 or Unit 2 Aux Buildings as sensed by either of the above flow detectors

2.0 AUTOMATIC ACTION:

2.1 None

3.0 OPERATOR ACTIONS:3.1 Attempt to **DETERMINE** validity of alarm as follows:

- ◆ The presence or absence of other indications:
 - ◆ Coded Fire Alarms
 - ◆ Annunciators A-7, A-15, or A-16
 - ◆ Zone indications on 1RP5
 - ◆ Unit 2 indications
- ◆ Local observation of either a fire or a FPS rupture

3.2 IF alarm is due to testing in progress,
THEN no further action is required.

3.3 IF Window A-16, FIRE PROT WTRFLO IN CNTMT is alarming,
THEN GO TO that alarm response.

(Continued)

- 3.4 IF water flow is indicated into Unit 2 Containment,
THEN CONFIRM that this window is alarming due to Unit 2 problem and no further action is required for this alarm.
- 3.5 **NOTIFY** the Emergency Services Department that water flow exists into Aux Building.
- 3.6 IF alarm is valid due to a fire,
THEN GO TO S1.OP-AB.FIRE-0001(Q), Control Room Fire Response.
- 3.7 IF alarm is valid due to a FPS rupture,
THEN:
- A. **CLOSE** 1FP186 AND 1FP187, FP AUX BLDG ISOL VLV CLS, at 1RP5.
 - B. **NOTIFY** UNIT 2 Control Room AND Emergency Services Department that 1FP186 and 1FP187 are closed.
 - C. Send an Operator to determine if a pipe rupture exists in Unit 1 and Unit 2 Aux Building or Switchgear Room.
- IF a rupture exists,
THEN:
- a. **ISOLATE** the rupture.
 - b. Coordinate with Emergency Services and **REOPEN** 1FP186 AND 1FP187.
 - c. **INITIATE** S1.OP-AB.ZZ-0002(Q), Flooding.
- 3.8 IF alarm is invalid,
THEN INITIATE a notification to investigate and correct cause of alarm.

ALARM A-25	25 AUX ALM SYS PWR FAIL
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 One or more of the following: A. Switch S1 (Master) or S2 (Backup) in Cab. 133 tripped B. 14MAC-33S, AUX ANNUN SYSTEM DATA LOGGING MASTER C. 12MAC-33S, AUX ANNUN SYSTEM DATA LOGGING BACKUP D. Loss of Internal Power Supplies 2.0 <u>AUTOMATIC ACTION:</u>	
<u>NOTE</u> The Aux Alarm System should transfer to other power supply. No loss of power should occur.	
2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 SEND Operator to: A. CHECK status of 14MAC-33S, AUX ANNUN SYSTEM DATA LOGGING MASTER B. CHECK status of 12MAC-33S, AUX ANNUN SYSTEM DATA LOGGING BACKUP (Continued)	
Page 1 of 2	
A-25	

3.1 Continued)

C. **CHECK** status of S1 AND S2 at bottom of Aux Alarm System Cabinet 133.

3.2 **RUN** a Summary to ensure Aux Alarm System still has power.

3.3 IF Aux Alarm System has lost power,
THEN:

A. **REFER** to T/S 4.2.1.1 for required monitoring and logging of indicated AFD using S1.OP-ST.NIS-0001(Q), Power Distribution - Axial Flux Difference.

B. **REFER** to T/S 4.4.6.2.b to evaluate compensatory actions required to continue monitoring Containment Sump Pump operation.

C. **REVIEW** S1.OP-AR.ZZ-0014(Q), Auxiliary Annunciator, for loss of alarm function for other components.

D. **NOTIFY** the SM/CRS to refer to the ECG.

3.4 **NOTIFY** Maintenance to investigate and correct cause of alarm.

ALARM A-26	26 SPRY COMPR CH IV UNSAFE
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 At Rack #14, Bistable Switch 1BS-948A in BYPASS position (up), with CT switch 1CT-948A in NORMAL (down), (inner door closed). 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u>	
<u>NOTE</u>	
This alarm indicates that the Containment Pressure Channel output has been removed from the Spray Coincidence Logic. This changes the logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> alarm is momentary during maintenance or testing, <u>THEN</u> no further action is required. 3.2 <u>IF</u> alarm persists during testing, <u>THEN NOTIFY</u> Maintenance that an improper switch lineup exists. 3.3 <u>IF</u> no maintenance or testing is in progress, <u>THEN:</u> A. OBSERVE position of Bistable Switch 1BS-948A in Rack #14. (NORMAL position is down.) B. NOTIFY Maintenance to investigate and correct cause of alarm. 3.4 REFER to Technical Specifications.	
Page 1 of 1	
A-26	
References: Dwg. 220025	

ALARM A-27	27 SPRY COMPR CH IV ON TEST
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 At Rack #14, Bistable Switch 1BS-948A in BYPASS position (up)	
2.0 AUTOMATIC ACTION: 2.1 None	
3.0 OPERATOR ACTIONS:	
NOTE	
This alarm indicates that the Containment Pressure Channel output has been removed from the Spray Coincidence Logic. This changes the logic from 2-of-4 to 2-of-3.	
3.1 <u>IF</u> maintenance or testing is being performed, <u>THEN ENSURE</u> alarm clears when testing is complete.	
3.2 <u>IF</u> no maintenance or testing is in progress, <u>THEN:</u>	
A. OBSERVE AND REPORT position of Bistable Switch 1BS-948A in Rack #14 to the SM/CRS. (NORMAL position is down.)	
B. NOTIFY Maintenance to investigate cause of alarm.	
C. REFER to Technical Specifications.	
Page 1 of 1 A-27	
References: Dwg. 220025	

ALARM A-28	28 RX PROT CH IV ON TEST 
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Any of the following: A. One or more of the doors of Racks 14, 15, or 31 are open (front or back). B. Any Reactor Protection System Channel IV Instrument Loop in test (Any Channel IV CT Test switch in TEST) 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 DETERMINE source of alarm from Annunciator CRT. <u>CRT Point</u> <u>Description</u> 376 RPS Channel IV Rack 14, 15, or 31 Door Open 374 RPS Channel IV Instrument Loop in Test 3.2 <u>IF</u> maintenance or testing is being performed, <u>THEN ENSURE</u> alarm clears when testing is complete. (Continued)	
Page 1 of 2	A-28

3.3 IF no maintenance or testing is in progress,
THEN send an Operator to Racks 14, 15, AND 31 to **DETERMINE** source of alarm.

A. IF cause is an open door,
THEN CLOSE appropriate door(s) AND ENSURE alarm clears.

B. IF cause is a Channel in test,
THEN:

1. **NOTIFY** Maintenance to restore channel to operation
IAW appropriate procedure.
2. **REFER** to Technical Specifications.

<p>ALARM</p> <p>A-29</p>	<p>29</p> <p>SEC 1A-1C TEST OR TRBL</p>
<p>DEVICES: N/A</p> <p>SETPOINT: N/A</p>	
<p>1.0 CAUSE(S):</p> <p>1.1 Any SEC:</p> <ul style="list-style-type: none"> ◆ Valid Mode Op (no further action required) ◆ Door Open ◆ Safeguards Emergency Cabinet Loss of Power ◆ INPUT BLOCK Switch in block (up) position ◆ V1 or V2 Test Switch in BLK ON position ◆ UV TEST SWITCH(s) (on lower section of SEC) in ON ◆ AUTO TEST or AUTO TEST ANNUNCIATION ALIGNMENT Switch (on lower section of SEC) misaligned. ◆ Auto Test Fault ◆ Valid Input (Mode Op not required): [C0561] 	
<p>NOTE</p> <p>An example of a "Valid Input (Mode OP not required)" would be an actual undervoltage on 1A 4KV Vital Bus, resulting in a single UV input on 1B and 1C SECs. 1A SEC would be in "Mode Op", while 1B and 1C SEC would be in "Valid Input (Mode Op not required)."</p>	
<ul style="list-style-type: none"> ◆ A single Undervoltage Input ◆ 230V CONTROL CENTERS RESET pushbutton depressed when not required 	
<p>(Continued)</p>	
<p>Page 1 of 7</p>	
<p>A-29</p>	

2.0 **AUTOMATIC ACTION:**

2.1 None

3.0 **OPERATOR ACTIONS:**3.1 **DETERMINE** source of alarm at Annunciator CRT.

<u>CRT Point</u>	<u>Description</u>
378	Safeguards Equipment Cabinet 1A Test or Trouble
379	Safeguards Equipment Cabinet 1B Test or Trouble
380	Safeguards Equipment Cabinet 1C Test or Trouble

3.2 **ENSURE** "EMERGENCY LOADING RESET" Safeguards Operation bezel light illuminated.3.3 IF Diesel Generator is synchronized to Vital Bus,
THEN Operator action is not required.3.4 IF SEC door is open AND access authorized,
THEN no further action is required.3.5 IF SEC door is open AND no access is authorized,
THEN **CLOSE** door.3.6 IF power is lost to SEC,
THEN:A. **DECLARE** associated SEC inoperable.B. **REFER** to T/S 3.3.2.1, Table 3.3-3, Functional Unit 6.C. Send an Operator to **DETERMINE** status of appropriate breaker below:

◆ 1A SEC: 1AVIB24, 1A SAFEGUARD EMERGENCY CABINET

◆ 1B SEC: 1BVIB27, 1B SAFEGUARD EMERGENCY CABINET

◆ 1C SEC: 1CVIB9, 1C SAFEGUARD EMERGENCY CABINET

D. **NOTIFY** Maintenance to investigate and correct cause of Loss of Power.

(Continued)

- 3.7 IF INPUT BLOCK, V1 or V2 TEST, or UV Test Switch(s) is misaligned,
THEN:
- A. **NOTIFY** the SM/CRS.
 - B. **DETERMINE** proper switch alignment.
 - C. **RETURN** switch to OFF OR down position as applicable.
 - D. **DETERMINE** desired ATI mode of operation.
 - E. IF ATI is required ON,
THEN:
 - 1. **ENSURE** AUTO TEST ANNUNCIATION ALIGNMENT AND AUTO TEST switches are ON.
 - 2. **PLACE** AUTO TEST switch to RESET position.
 - 3. **RETURN** AUTO TEST switch to ON position.
 - 4. **ENSURE** SEC is reset per Step 3.13, indications for ATI ON, Normal Operation.
 - F. IF ATI is required OFF,
THEN:
 - 1. **ENSURE** AUTO TEST ANNUNCIATION ALIGNMENT AND AUTO TEST switches are in RESET.
 - 2. **ENSURE** SEC is reset per Step 3.13, indication for ATI OFF, Normal Operation.

(Continued)

- 3.8 IF AUTO TEST OR AUTO TEST ANNUNCIATION ALIGNMENT Switch is misaligned,
THEN:
- A. **NOTIFY** the SM/CRS.
- B. **DETERMINE** desired ATI mode of operation.
- C. IF ATI is required ON,
THEN:
1. **ENSURE** AUTO TEST ANNUNCIATION ALIGNMENT AND AUTO TEST switches are ON.
 2. **PLACE** AUTO TEST switch to RESET position.
 3. **RETURN** AUTO TEST switch to ON position.
 4. **ENSURE** SEC is reset per Step 3.13, indications for ATI ON, Normal Operation.
- D. IF ATI is required OFF,
THEN:
1. **ENSURE** AUTO TEST ANNUNCIATION ALIGNMENT AND AUTO TEST switches are in RESET.
 2. **ENSURE** SEC is reset per Step 3.13, indication for ATI OFF, Normal Operation.

(Continued)

3.9 IF "Valid Input (Mode Op not required)" occurs as indicated for ATI ON condition of Step 3.13,
THEN the SEC is OPERABLE. [C0561]

NOTE

- ◆ The valid input must be removed for the ATI to resume sequencing.
- ◆ "TEST NO." 00 will start flashing after the valid input is removed.

- A. **VERIFY** the valid input is removed.
- B. **PLACE** AUTO TEST Switch in RESET position.
- C. **RETURN** AUTO TEST Switch in ON position.
- D. **MONITOR** TEST NO. window for at least 2 complete cycles.
- E. IF Fault re-occurs,
THEN NOTIFY Maintenance to determine and correct cause of alarm.

3.10 IF SEC Auto Test fault occurs,
(as indicated by a flashing two-digit number on TEST NO. window and an illuminated SEC trouble light),
AND the EMERGENCY LOADING RESET pushbutton had been depressed without an SEC Valid Input,
THEN the SEC is OPERABLE.

- A. **PLACE** AUTO TEST Switch in RESET position.
- B. **RETURN** AUTO TEST Switch in ON position.
- C. **MONITOR** TEST NO. window for at least 2 complete cycles.

(Continued)

3.11 IF SEC Auto Test fault occurs, (as indicated by a flashing two-digit number on TEST NO. window AND an illuminated SEC trouble light), [70028727]
THEN:

- A. **DIRECT** Maintenance to investigate and correct cause of the alarm IAW SC.MD-CM.SEC-0001(Q), Safeguard Equipment Control Troubleshooting.
- B. IF ATI card mismatch caused the alarm OR SEC Auto Test Fault re-occurs, THEN DECLARE associated SEC inoperable AND REFER to T/S 3.3.2.1, Table 3.3-3, Functional Unit 6.
- C. IF ATI card mismatch is NOT the cause of the alarm AND SEC Auto Test Fault remains clear, THEN INITIATE a Notification for documentation and trend coding.

3.12 IF SEC Auto Test fault has NOT occurred as indicated by:

- ◆ AUTO TEST and AUTO TEST ANNUNCIATION ALIGNMENT switches in ON position
- ◆ MODE OP light flashing
- ◆ TEST NO. window sequencing
- ◆ SEC TROUBLE light extinguished

THEN:

- A. **MONITOR** SEC TEST NO. window for at least 2 complete cycles.
- B. IF SEC completes 2 test cycles, THEN SEC is OPERABLE.
- C. **INITIATE** a Notification to determine and correct the cause of alarm.

3.13 (next page)

(Continued)

Automatic Test Insertion (ATI) Condition: ATI ON	SEC Cabinet Switch		Position
	AUTO TEST		ON
	AUTO TEST ANNUNCIATION ALIGNMENT		ON
SEC Cabinet Indicators	System Status		
	Normal Operation	Valid Mode Op	Valid Input (Mode Op not required)
	SEC TROUBLE	Extinguished	Illuminated
	MODE OP	Flashing	Extinguished
	TEST NO.	Progressive Steps	Steady "00" (1)
Automatic Test Insertion (ATI) Condition: ATI OFF	SEC Cabinet Switch		Position
	AUTO TEST		RESET
	AUTO TEST ANNUNCIATION ALIGNMENT		RESET
SEC Cabinet Indicators	System Status		
	Normal Operation	Valid Mode Op	Valid Input (Mode Op not required)
	SEC TROUBLE	Extinguished	Extinguished
	MODE OP	Extinguished	Flashing
	TEST NO.	Steady "00"	Steady "00"
Automatic Test Insertion (ATI) Condition: UNDEFINED	SEC Cabinet Switch		Position
	AUTO TEST		ON
	AUTO TEST ANNUNCIATION ALIGNMENT		RESET
SEC Cabinet Indicators	System Status		
	Normal Operation	Valid Mode Op	Valid Input (Mode Op not required)
	SEC TROUBLE	Extinguished	Extinguished
	MODE OP	Extinguished	Flashing
	TEST NO.	Progressive Steps	Steady "00"
Automatic Test Insertion (ATI) Condition: UNDEFINED	SEC Cabinet Switch		Position
	AUTO TEST		RESET
	AUTO TEST ANNUNCIATION ALIGNMENT		ON
SEC Cabinet Indicators	System Status		
	Normal Operation	Valid Mode Op	Valid Input (Mode Op not required)
	SEC TROUBLE	Illuminated	Illuminated
	MODE OP	Extinguished	Flashing
	TEST NO.	Steady "00"	Steady "00"
(1) TEST NO. "00" will be flashing if the valid input is no longer present. (ie; a single UV input to the SEC was received, then cleared.)			
Page 7 of 7			A-29
References: Dwg. 236266, 211631			

<p>ALARM</p> <p>A-30</p>	<p>30</p> <p>CROSSFLOW TROUBLE</p>
<p>DEVICES: N/A</p> <p>SETPOINT: N/A</p>	
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Communication Lost (#)</p> <p>1.2 Rapid Defouling Detected</p> <p>1.3 Long Buffer Uncertain (#)</p> <p>1.4 Short Buffer Uncertain</p> <p>1.5 CF Low Power</p> <p>1.6 CF in Configuration Mode (#)</p> <p>1.7 CF Out of Range Low (#)</p> <p>1.8 CF out of Range Hi (#)</p> <p>1.9 CF Switched Off (Manual Action Only)</p> <p>1.10 CF Quality Not Good (#)</p> <p>1.11 CF Feedwater Transient</p> <p>1.12 CF Time Delay Elapsed</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p> <p>◆ Cf defaults to 1.0 as a result of:</p> <ul style="list-style-type: none"> • CF Low Power • CF Feedwater Transient • CF Time Delay Elapsed 	
<p>Page 1 of 3</p>	<p>A-30</p>
<p>References: Dwg. 324783, 324784, 324785, 324835</p>	

NOTE

Acknowledging alarm point UPPALARM on Plant Computer Alarm Display will clear OHA. The alarm will remain on the Plant Computer "Crossflow System" display until the alarm condition has cleared.

3.0 **OPERATOR ACTIONS:**

- 3.1 IF any alarm identified with (#) is received,
THEN PERFORM the following:

NOTE

Upon the receipt of an alarm identified with a (#) sign, the Plant Computer will default to the last known valid Correction Factor (CF). A timer is also started to track the use of the default value. The timer will reset to "0" upon the receipt of a valid CF from Crossflow or expire after 20 hours. If the timer resets, then the Crossflow CF is restored to automatic operation. If the counter expires, then a CF Time Delay alarm is generated and the CF is automatically set to 1.0.

- A. **CHECK** the Plant Computer correction factors (11-12FW Flow1 COR FAC) are indicating the last good value of Crossflow correction factor.
- B. **MAINTAIN** the following parameters $\leq 100\%$ RTP values specified in S1.OP-IO.ZZ-0004(Q):
- ◆ PT505N AND PT506N (Plant Computer)
 - ◆ Average Power ΔT power ($\pm 0.3^\circ\text{F}$)

NOTE

Communication Lost (#) is expected at low power operations. If an alarm is expected and clears, Reactor Engineering and Digital Systems Group should NOT be contacted.

- C. **NOTIFY** Reactor Engineering and Digital Systems Group of unexpected alarm(s).
- 3.2 IF Rapid Defouling Detected alarm is received,
THEN PERFORM S1.OP-IO.ZZ-0004(Q),
Attachment for Feedwater Nozzle Fouling/Defouling.
- 3.3 IF the Short Buffer Uncertain alarm is received,
THEN CHECK the Plant Computer correction factors
(11-14 FW Flow1 COR FAC) are indicating the correction as determined by the
Crossflow System. This alarm affects the correction factor for defouling only.

- 3.4 IF the CF Feedwater Transient alarm is received,
THEN PERFORM the following:
- A. **CHECK** the Plant Computer correction factors (11-14 FW Flow1 COR FAC) are set at 1.0.
 - B. **MAINTAIN** the following parameters $\leq 100\%$ RTP values specified in S1.OP-IO.ZZ-0004(Q).
 - ◆ PT505N AND PT506N (Plant Computer)
 - ◆ Average Power ΔT power ($\pm 0.3^\circ\text{F}$)
 - C. **NOTIFY** Reactor Engineering and Digital Systems Group of alarm.
- 3.5 IF the CF Low Power alarm is received,
THEN CHECK the Plant Computer correction factors (11-14 Flow1 COR FAC) are set to 1.0.
This alarm is based upon feedwater flow $< 85\%$ RTP.
- 3.6 IF the CF Time Delay Elapsed alarm is received,
THEN:
- A. **REDUCE** power to maintain $\leq 100\%$ RTP (3459 MWt)
 - B. **CHECK** the Plant Computer correction factors (11-14 Flow1 COR FAC) are set to 1.0.

NOTE

2 Hours of data collection is required to obtain a valid correction factor.

- C. **PERFORM** one of the following within 4 hours:
 - ◆ **RESTORE** Feedwater Crossflow, with a valid correction factor. The factor may be automatically calculated by the Crossflow System or manually calculated IAW SC.RE-RA.ZZ-0019(Q), Feedwater Flowrate Correction Factor.
 - OR
 - ◆ **REDUCE** power to maintain $\leq 98.6\%$ RTP (3411 MWt).

ALARM	31
A-31	FIRE PROT WTR PRESS LO
DEVICES: PD-3636	
SETPOINT: 65 psig decreasing	
1.0 <u>CAUSE(S):</u>	
1.1 Fire main pressure ≤ 65 psig.	
2.0 <u>AUTOMATIC ACTION:</u>	
<u>NOTE</u>	
#1 Fire Pump should have started at 85 psig, and #2 Fire Pump should have started at 75 psig.	
2.1 None	
3.0 <u>OPERATOR ACTIONS:</u>	
3.1 NOTIFY the Emergency Services Department to assist in determining cause of alarm.	
3.2 DETERMINE running status of #1 <u>AND</u> #2 Fire Pump.	
3.3 <u>IF</u> either or both Fire Pumps are running, <u>THEN INVESTIGATE</u> for:	
◆ A FPS rupture	
◆ Improper valve lineup	
◆ Loss of water supply to Fire Pumps	
(Continued)	
Page 1 of 2	A-31

3.4 IF a Fire Pump is NOT is service,
THEN:

A. IF conditions require the Fire Pump to be in service,
THEN direct Operator to **START** the Fire Pump.

B. **NOTIFY** Maintenance to investigate and correct cause of alarm.

3.5 **REFER** to S1.OP-AB.FP-0001(Q), Fire Protection System Malfunction.

ALARM A-32	32 FIRE PROT 28VDC LOSS
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Loss of 28VDC to Fire Panel 1FP4 circuits: A. 1FP-4-105, CR PANEL IND LIGHTS, trip B. 1FP-4-115, CN FILT F/A L/O & CONTISOV, trip C. 1CDEZAX16, FIRE PROT ALARM SYSTEM POWER CABINET 1FP4, trip D. Loss of Power to Dist Cab 1CDE	
2.0 <u>AUTOMATIC ACTION:</u>	
<u>NOTE</u>	
<ul style="list-style-type: none"> ◆ If 1FP147, Containment Fire Prot Isol, has lost 28VDC control power, it will fail closed. It may be manually opened, if necessary. ◆ If 1FP186 and 1FP187, Aux Bldg Isolations, have lost 28VDC control power, they will fail open. These valves cannot be operated manually. ◆ All circuits that have lost power will be unable to perform their functions (alarms, actuation, indications, etc.) 	
2.1 None	
3.0 <u>OPERATOR ACTIONS:</u> 3.1 NOTIFY Emergency Services Department to assist in determining cause of alarm. (Continued)	
Page 1 of 2 A-32	

3.2 Send an Operator to **CLOSE** the following breakers:

- ◆ 1FP-4-105, CR PANEL IND LIGHTS
- ◆ 1FP-4-115, CN FILT F/A L/O & CONTISOV
- ◆ 1CDEZAX16, FIRE PROT ALARM SYSTEM POWER CABINET 1FP4

3.3 IF all the above breakers are closed,
THEN NOTIFY Maintenance to investigate and correct cause of alarm.

ALARM

A-33

33

AUX ALM
SYS
TRBL

DEVICES: N/A

SETPOINT: N/A

1.0 CAUSE(S):

- 1.1 A grounded lead or component on Auxiliary Annunciator System
- 1.2 System Alert (I/O module buffer or output device failure)
- 1.3 System Fault (communication failure between ECU and CIU, or a CIU module failure)

2.0 AUTOMATIC ACTION:

2.1 None

3.0 OPERATOR ACTIONS:

- 3.1 **DETERMINE** SER points in alarm using OHA CRT or OHA printer.
 - A. IF SER Point 265 is in alarm (indicating system fault or alert),
THEN:
 - 1. **REFER** to Event Classification Guide, RAL 11.7.1.c.
 - 2. **INITIATE** Notification(s) to identify and correct the problem.
 - B. IF SER Point 44 is in alarm (indicating system ground),
THEN:
 - 1. **REFER** to Event Classification Guide, RAL 11.7.1.c.
 - 2. Momentarily **PLACE** toggle switches at rear of Cabinet 34 from **NORMAL** to **ISOLATE** until ground clears or reverses polarity (this operation isolates 25 points indicated above switch).

(Continued)

3.1B (continued)

3. IF the ground is found in a group associated with one of the following circuits,
THEN PERFORM the action indicated for the circuit:
 - a. Circuit 0473: **REFER TO** T/S 4.2.1.1 for required monitoring and logging of indicated AFD.
 - b. Circuit 0683 and/or 0704: **REFER TO** T/S 4.4.6.1.b to evaluate compensatory actions required to continue monitoring Containment Sump Inventory.
4. WHEN the ground is isolated,
THEN NOTIFY Maintenance to further isolate ground by lifting leads at terminals, one at a time, until ground clears.
5. WHEN the ground is identified,
THEN:
 - a. **INITIATE** Notification(s) to correct the problem.
 - b. **DETERMINE** Alarm Points and circuits lost.

ALARM

34

A-34SSPS
TRN A
TRBL

DEVICES: N/A

SETPOINT: N/A

1.0 **CAUSE(S):**

1.1 Any of the following:

A. SSPS General Warning:

1. Reactor Trip Bypass Breaker Racked In or Closed
2. Loose or Removed Circuit Card in Logic Bay
3. Logic Ground Return Fuse blown
4. Loss of 48VDC supply from Logic Cabinets
5. Loss of 15VDC supply from Logic Cabinets
6. Testing in progress:
 - a. Multiplexer Test Switch in INHIBIT position
 - b. Output Mode Selector Switch in TEST position
 - c. Logic A, Permissive, or Memories Switch not in OFF

OR

B. Loss of 115VAC supply to the Train A Output Cabinet

(Continued)

Page 1 of 2

A-34

2.0 AUTOMATIC ACTIONS:NOTE

- ◆ Alarm indicates SSPS in partial trip condition. Trouble Alarm on both trains will initiate Reactor Trip.
- ◆ If Safeguards actuation occurs during loss of power to Output Cabinet, no components in this train will be actuated.

2.1 SSPS General Warning Alarm lamp on the Logic Cabinet will light if alarm is due to a General Warning condition.

3.0 OPERATOR ACTIONS:

3.1 **DETERMINE** source of alarm at Annunciator CRT.

<u>CRT Point</u>	<u>Description</u>
41	SSPS Train A Trouble - SSPS General Warning
43	SSPS Train A Trouble - Loss of 115VAC Supply in Output Relay Cab

3.2 IF authorized testing is in progress,
THEN ENSURE the alarm clears when testing is complete.

3.3 IF no authorized testing is in progress,
THEN:

A. IF loss of 115VAC power is indicated,
THEN send an Operator to **CHECK** status of the following:

1. 1AV1B3, REACTOR PROTECTION CHANNEL #1 TRAIN A #62

2. 1AV1B5, REACTOR PROTECTION OUTPUT CABINET TRAIN A #103

3. 1DVIB2, REACTOR PROTECTION CHANNEL IV TRAIN A #62

B. **NOTIFY** Maintenance to investigate and correct cause of alarm.

C. **REFER** to Technical Specifications AND the ECG.

ALARM A-35	35 SSPS TRN A ON TEST
DEVICES: N/A SETPOINT: N/A	
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Either of the following:</p> <p style="margin-left: 40px;">A. One or more of the doors on Solid State Protection System Train A Output Cabinets open.</p> <p style="margin-left: 40px;">B. One or more of the test switches of the Solid State Protection Train A Output Test and Interface Cabinet are not in UNBLOCK OUTPUT (Normal Position).</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p> <p>2.1 None</p> <p>3.0 <u>OPERATOR ACTIONS:</u></p> <p>3.1 <u>IF</u> authorized testing is in progress, <u>THEN ENSURE</u> the alarm clears when testing is completed.</p> <p>3.2 <u>IF</u> authorized testing is not in progress, <u>THEN:</u></p> <p style="margin-left: 40px;">A. NOTIFY Maintenance to investigate and correct cause of alarm.</p> <p style="margin-left: 40px;">B. REFER to Technical Specifications.</p>	
Page 1 of 1 A-35	
References: Dwg. 232011	

ALARM A-36	36 AMSAC BYPASSED
DEVICES: N/A SETPOINT: N/A	
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Turbine Steamline Inlet pressure inputs indicating turbine power <40% for 260 seconds or longer.</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p> <p>2.1 None</p> <p>3.0 <u>OPERATOR ACTIONS:</u></p> <p>3.1 ENSURE turbine power is less than 40%.</p> <p>3.2 <u>IF</u> alarm is unexpected, <u>THEN NOTIFY</u> Maintenance to investigate and correct alarm.</p>	
Page 1 of 1	A-36
References: Dwg. PSBP 309001	

ALARM A-37	37 SEIS RCDR SYS ACT
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 Seismic Recorder actuated 2.0 <u>AUTOMATIC ACTION:</u> 2.1 None 3.0 <u>OPERATOR ACTIONS:</u> 3.1 MONITOR Seismic Recorder to determine if a Seismic Event occurred. 3.2 <u>IF</u> no seismic event has occurred, <u>THEN INITIATE</u> a Notification for Maintenance to investigate and correct cause of alarm. 3.3 <u>IF</u> a seismic event has occurred, <u>THEN GO TO</u> SC.OP-AB.ZZ-0004(Q), Earthquake.	
Page 1 of 1 A-37	
References: Dwg. 219398, 231926	

ALARM

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A-38MIMS
IMPACT

DEVICES:

SETPOINT:

1.0 **CAUSE(S):**

1.1 5-10 msec impact pulse on the Loose Parts Monitoring System

2.0 **AUTOMATIC ACTION:**

2.1 None

3.0 **OPERATOR ACTIONS:**3.1 **DETERMINE** status of Power Interrupt light at bottom of MIMS cabinet.A. IF Power interrupt light is ON,
THEN:1. **DEPRESS** RESET switch on Power Interrupt Panel.2. IF light de-energizes,
THEN:a. **NOTIFY** the SM/CRS AND Engineering of intermittent problem.b. **MAKE** an entry in Control Room Narrative log.B. IF the Power interrupt light is OFF
OR cannot be reset,
THEN CONTINUE.

(Continued)

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- 3.2 **DETERMINE** affected channel(s) by performing the following at MIMS Cabinet:
- A. **TURN** toggle switch for audio speaker ON.
 - B. **ROTATE** dial (on the upper panel), to each channel until affected channel(s) are identified (with the speaker).
 - C. **CONFIRM** affected channel(s) by observing MIMS Module(s) that have red AMP light energized.
 - D. **RECORD** details of findings in Control Room Narrative Log.
 - E. **TURN** toggle switch for audio speaker OFF.
- 3.3 **DEPRESS** RESET pushbutton on appropriate MIMS module(s).
- A. IF alarm(s) clear,
THEN no further action is required.
 - B. IF still in alarm,
THEN:
 - 1. **NOTIFY** the SM/CRS to refer to the ECG.
 - 2. **NOTIFY** Reactor Engineering.
 - 3. **INITIATE** a Notification.

ALARM A-39	39 FIRE PROT CO ₂ PRESS HI OR LO
DEVICES: PD-7308 SETPOINT: Hi: 325 psig Lo: 290 psig	
1.0 <u>CAUSE(S):</u> 1.1 High Pressure (Either of the following): A. Failure of refrigeration unit compressor to start B. Loss of Power to refrigeration unit 1.2 Low Pressure (Any of the following): A. Decreasing CO ₂ level B. Failure of refrigeration unit compressor to stop C. CO ₂ leakage 2.0 <u>AUTOMATIC ACTION:</u>	
<u>NOTE</u> The compressor should start/stop at pressures of 305/295 psig. Relief Valve lifts to outside at 341 psig.	
2.1 None (Continued)	
Page 1 of 2	
A-39	

3.0 **OPERATOR ACTIONS:**

- 3.1 **NOTIFY** Emergency Services Department to assist in determining cause of alarm.
- 3.2 **MONITOR** 1RP5 AND Window A-8 to determine if a CO₂ Discharge has occurred.

CAUTION

Extreme care should be taken when entering an area that may have a CO₂ leak, because CO₂ does not support life.

- 3.3 **SEND** an Operator AND Emergency Services Department to 10 ton storage tank, Aux Bldg 84', to perform the following:
- A. **MONITOR** for CO₂ leakage.
- B. **VERIFY** CO₂ pressure AND level.
- 3.4 IF CO₂ leakage is evident or suspect,
THEN EVACUATE area until air quality can be determined.
- 3.5 IF pressure is low with no leak or discharge,
AND refrigeration unit is still running,
THEN send an Operator to **OPEN** 1GX3AX2E, 1CO2 PRESSURE MOTOR.
- 3.6 IF pressure is high,
AND refrigeration unit is not running,
THEN send an Operator to **CLOSE** 1GX3AX2E, 1CO2 PRESSURE MOTOR.
- 3.7 **NOTIFY** Maintenance to investigate and correct cause of alarm.
- 3.8 IF CO₂ level is low,
THEN NOTIFY Emergency Services Department to fill 10 Ton Tank IAW SC.FP-TLFS-0001(Q), Filling Salem Station CO2 Storage Tanks.

ALARM

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A-40

DEVICES:

SETPOINT:

SPARE

<p>ALARM</p> <p>A-41</p>	<p>41</p> <p>AUX ALM SYS PRINTER</p>
<p>DEVICES: N/A</p> <p>SETPOINT: N/A</p>	
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Aux Alarm Sys Printer in operation</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p> <p>2.1 None</p> <p>3.0 <u>OPERATOR ACTIONS:</u></p> <p>3.1 INVESTIGATE printout.</p> <p>3.2 <u>IF</u> point 515, MSR TROUBLE, is in alarm, <u>THEN:</u></p> <p>A. <u>IF</u> any of the following error messages are displayed on the Panel Mate Plus display at Rack 19-5:</p> <ul style="list-style-type: none"> ● No communication between PLC and Panel Mate display: "1702" ● Too much data being sent from PLC to Panel Mate display: "1750" ● Module Health bit: "Analog Current Output Module 1, RC19-4, Drop 1" ● Module Health bit: "Analog Current Output Module 2, RC19-4, Drop 1" ● Module Health bit: "Analog Current Output Module 3, RC19-4, Drop 1" ● ACO Module 1 status bit: " Channel 1 Loop Broken Wire" ● ACO Module 2 status bit: " Channel 1 Loop Broken Wire" ● ACO Module 3 status bit: " Channel 1 Loop Broken Wire" <p><u>THEN TRANSFER</u> to Alternate Controls IAW S1.OP-SO.MSR-0001(Z).</p> <p>B. <u>IF</u> any other messages displayed on the Panel Mate display at Rack 19-5, <u>THEN CONTACT</u> the Digital Systems Group for Troubleshooting and Repair.</p> <p>(Continued)</p>	
<p>Page 1 of 2</p>	<p>A-41</p>

3.3 IF Point 919, CNTMT APD LOSS OF FLOW PATH/1VC7-14 OFF POS, in alarm, THEN:

- A. **STOP** CNTMT APD pump.
- B. **REFER** to Technical Specifications.

NOTE

◆ Alarms on the following points could be the result of an open breaker, blown control power fuses, or MCC transfer switch in EMERGENCY:

Point Description

- 878 11 CCHX OUTLET ISOL VLV 1CC30, LOSS OF 115VAC
- 882 12 CCHX OUTLET ISOL VLV 1CC31, LOSS OF 115VAC

◆ Alarms on the following points could be the result of valve position, an open breaker, blown control power fuses, or MCC transfer switch in EMERGENCY:

Point Description

- 349 SERV WATER STOP VL 12SW22, OFF NORM POS OR LOSS OF 115VAC
- 350 SERV WATER STOP VL 12SW21, OFF NORM POS OR LOSS OF 115VAC
- 352 SERV WATER VL 14SW20, OFF NORM POS OR LOSS OF 115VAC
- 365 SERV WATER TIE VL 11SW23, OFF NORM POS OR LOSS OF 115VAC
- 366 SERV WATER TIE VL 12SW23, OFF NORM POS OR LOSS OF 115VAC
- 438 S. W. VALVE 12SW20, OFF NORM POS OR LOSS OF 115VAC
- 455 S. W. VALVE 11SW21, OFF NORM POS OR LOSS OF 115VAC
- 459 S. W. VALVE 11SW22, OFF NORM POS OR LOSS OF 115VAC

3.4 **REFER** to S2.OP-AR.ZZ-0018(Q), Auxiliary Annunciator, for additional information and actions which may be appropriate to the Unit 1 alarm.

3.5 **INITIATE** appropriate action as required.

ALARM

42

A-42SSPS
TRN B
TRBL

DEVICES: N/A

SETPOINT: N/A

1.0 **CAUSE(S):**

1.1 Any of the following:

A. SSPS General Warning:

1. Reactor Trip Bypass Breaker Racked In or Closed
2. Loose or Removed Circuit Card in Logic Bay
3. Logic Ground Return Fuse blown
4. Loss of 48VDC supply from the Logic Cabinets
5. Loss of 15VDC supply from the Logic Cabinets
6. Testing in progress:
 - a. Multiplexer Test Switch in INHIBIT position
 - b. Output Mode Selector Switch in TEST position
 - c. Logic B, Permissive, or Memories Switch not in OFF

OR

B. Loss of 115VAC supply to Train B Output Cabinet

(Continued)

2.0 AUTOMATIC ACTION:**NOTE**

- ◆ Alarm indicates SSPS in partial trip condition. Trouble Alarm on both trains will initiate Reactor Trip.
- ◆ If Safeguards actuation occurs during loss of power to Output Cabinet, no components in this train will be actuated.

2.1 SSPS General Warning Alarm lamp on the Logic Cabinet will light if alarm is due to a General Warning condition.

3.0 OPERATOR ACTIONS:

3.1 **DETERMINE** the source of the alarm at the Annunciator CRT.

<u>CRT Point</u>	<u>Description</u>
48	SSPS Train B Trouble - SSPS General Warning
35	SSPS Train B Trouble - Loss of 115VAC Supply in Output Relay Cab

3.2 IF authorized testing is in progress,
THEN ENSURE the alarm clears when testing is complete.

3.3 IF no authorized testing is in progress,
THEN PERFORM the following:

A. IF a loss of 115VAC power is indicated,
THEN send Operator to **CHECK** status of the following:

1. 1BVIB3, REACTOR PROTECTION CHANNEL II TRAIN B #35
2. 1BVIB8, REACTOR PROTECTION OUTPUT CHANNEL TRAIN B #37
3. 1CVIB3, REACTOR PROTECTION CHANNEL III TRAIN B #35

(Continued)

3.4 (Continued)

B. **NOTIFY** Maintenance to investigate and correct cause of alarm.

C. **REFER** to Technical Specifications AND ECG.

<p>ALARM</p> <p>A-43</p>	<p>43</p> <p>SSPS TRN B ON TEST</p>
<p>DEVICES: N/A</p> <p>SETPOINT: N/A</p>	
<p>1.0 <u>CAUSE(S):</u></p> <p>1.1 Any of the following:</p> <p style="margin-left: 40px;">A. Door on Solid State Protection System Train B Output Cabinets is open.</p> <p style="margin-left: 40px;">B. Test switch of Solid State Protection System Train B Output Test and Interface Cabinet is not in UNBLOCK OUTPUT (Normal Position).</p> <p>2.0 <u>AUTOMATIC ACTION:</u></p> <p>2.1 None</p> <p>3.0 <u>OPERATOR ACTIONS:</u></p> <p>3.1 <u>IF</u> authorized testing is in progress, <u>THEN ENSURE</u> the alarm clears when testing is completed.</p> <p>3.2 <u>IF</u> authorized testing is not in progress, <u>THEN:</u></p> <p style="margin-left: 40px;">A. NOTIFY Maintenance to investigate and correct cause of alarm.</p> <p style="margin-left: 40px;">B. REFER to Technical Specifications.</p>	
<p>Page 1 of 1</p> <p>A-43</p>	
<p>References: Dwg. 232412</p>	

ALARM A-44	44 AMSAC TEST OR TRBL
DEVICES: N/A SETPOINT: N/A	
1.0 <u>CAUSE(S):</u> 1.1 One or more of the following: A. Loss of any System Power Supply (AC or DC) B. Partial AMSAC actuation (1 of 3 ALP Outputs) C. Diagnostic error D. Processor halted E. High Cabinet Temperature F. System Bypass or Mode Selector Switch out of NORMAL G. Common Sensor Inputs to ALPs are inconsistent	
2.0 <u>AUTOMATIC ACTION:</u>	
<u>NOTE</u> This alarm indicates that AMSAC may be incapable of actuating.	
2.1 None	
3.0 <u>OPERATOR ACTIONS:</u> 3.1 <u>IF</u> testing or maintenance is in progress, <u>THEN</u> no further action is required. (Continued)	
Page 1 of 2	
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- 3.2 IF alarm is valid,
AND cause is unexpected or unknown
THEN:
- A. **DECLARE** AMSAC System unavailable.
- B. **PLACE** AMSAC in BYPASS at AMSAC PANEL 856-1 as follows:
1. **ENSURE** S1A through S8A in NORMAL (Relay Panel A).
 2. **ENSURE** S1B through S8B in NORMAL (Relay Panel B).
 3. **PRESS** LAMP TEST pushbutton,
AND ENSURE all lamps illuminate.
 4. **PLACE** System Bypass Switch in BYPASS,
AND ENSURE the following:
 - a. SYSTEM ALARM LED on.
 - b. CHANNEL/SYSTEM BYPASS LED on.
- 3.3 **INITIATE** Notification(s) to investigate and correct the cause of alarm.
- 3.4 **NOTIFY** the SM/CRS and Engineering.

ALARM A-45	45 RMS CH TEST
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 Any RMS channel in test 2.0 AUTOMATIC ACTION: 2.1 None 3.0 OPERATOR ACTIONS: 3.1 DETERMINE affected channel from 1RP1 or Radiation Monitoring Cabinets 75, 109, 110, 113, 114, 120, 136, and 158. 3.2 <u>IF</u> maintenance or testing is in progress, THEN PERFORM the following: A. ENSURE alarm is due to testing. B. ENSURE alarm clears when testing is complete. 3.3 <u>IF</u> no maintenance or testing is in progress, THEN: A. Notify Maintenance to DETERMINE affected RMS channel <u>AND</u> to CORRECT cause. B. <u>IF</u> affected channel is inoperable, <u>THEN:</u> 1. NOTIFY Radiation Protection of the affected channel. 2. REFER to Technical Specifications.	
Page 1 of 1	
References: Dwg. 222891, 2, 3, & 5, and 242815	

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ALARM A-46	46 CMPTR FAIL
DEVICES: D123TS1, D123TS2, D123TS3, D456TS1, D456TS2, D456TS3, D789TS1, D789TS2, D789TS3 SETPOINT: 100°F	
1.0 <u>CAUSE(S):</u> 1.1 Any: A. Computer Inverter Failure B. Excessive heat in Plant Computer cabinets. C. Any Drop Failure	
2.0 <u>AUTOMATIC ACTION:</u>	
<u>NOTE</u>	
<ul style="list-style-type: none"> ◆ Due to loss of Rod Program calculation, OHA E-24, "Rod Deviation or Sequence" will not be valid. ◆ Other significant Plant Computer functions lost are: <ul style="list-style-type: none"> ● Post-Trip Review ● Sequence of Events Recorder (SER from OHA System will still be available, but only for points that feed Annunciators) 	
2.1 None	
3.0 <u>OPERATOR ACTIONS:</u> 3.1 NOTIFY the SM/CRS and Engineering.	
(Continued)	
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3.2 IF Loss of Power is indicated,
THEN:

A. **ENSURE CLOSED:**

- ◆ 3X41G1A1, 1 COMPUTER INVERTER PRIMARY FEEDER Switch at Substation Bus 1, 480V (3X41G) (located EI 100 U2 TB)
- ◆ 1FX1TB26X, 1 COMPUTER INVERTER ALTERNATE FEED Breaker on 1F 460V Bus
- ◆ 1CW1DC-DISC, 1 COMPUTER INVERTER 125VDC Feed, Switch at the Circulating Water 125VDC Bus (located on wall above battery)
- ◆ Battery Input Bkr on inverter
- ◆ Invertor Output Bkr on inverter

NOTE

- ◆ Loss of power for ≥ 2 hours may erase programming of Plant Computer computer.
- ◆ If all other sources of power are unavailable, 1F 460V Bus may be used via Breaker 1FX1TB25X, 1 COMPUTER INVERTER SECONDARY FEED. This requires setting NO. 1 COMPUTER INVERTER TRANSFER SWITCH, 1MTS41HC1A1X (located EI. 120 TB wall behind Inverter), to the secondary source and closing breaker 1FX1TB25X, 1 COMPUTER INVERTER SECONDARY FEED, ON 1F 460V Bus.

B. **RESTART** computer IAW SC.OP-SO.COM-0002(Q), Start/Stop Sequence For the Computer.

3.3 IF Computer is restored,
THEN:

- A. **ENSURE** all displayed indications are restored.
- B. Notify Maintenance to **INVESTIGATE AND CORRECT** cause of alarm.

(Continued)

- 3.4 IF thermistor temperature indicated on Plant Computer points D123TS1,2,3, D456TS1,2,3 and D789TS1,2,3 is above the alarm setpoint, THEN **DIRECT** Maintenance to investigate and correct malfunction.
- 3.5 IF thermistor temperature indicated on Plant Computer points D123TS1,2,3, D456TS1,2,3 and D789TS1,2,3 is below the alarm setpoint but above the reset setpoint, THEN **COOL** the thermistor directly, using a freon spray or similar product to cool the device below the reset setpoint.
- 3.6 IF Plant Computer cannot be restored, THEN:
- A. **INITIATE** alternate monitoring or surveillance as follows:
1. Circulating Water Condenser 24 Hr Discharge Differential Temperature Log IAW S1.OP-DL.ZZ-0001(Q), Control Room Logs.
 2. RWST Temperature - Obtain local reading from TD-3686, Panel 378-1, OR Request Maintenance to obtain temperature reading for Plant Computer point T0650A from the Auxiliary Termination Panel in the Relay Room.
 3. Containment Average Temperature - (Computer Average Temperature using SPDS Points 2317-2326 as identified in S1.OP-DL.ZZ-0003(Q), Control Room Readings - Mode 1-4.
Ensure at least 5 independent points are used to calculate the average (refer to T/S 4.6.1.5).
 4. Regen Hx Chg Outlet Temperature - Request Maintenance to obtain temperature reading for Plant Computer point T0126A from the Auxiliary Termination Panel in the Relay Room.
 5. Increased Control Rod Position surveillance IAW T/S 4.1.3.1.1 and 4.1.3.2.1.1.
- B. Notify Maintenance Department to:
1. **INVESTIGATE AND CORRECT** malfunction.
 2. **PLACE** Plant Computer in operation.

ALARM A-47	47 FIRE PROT TRBL
DEVICES: N/A SETPOINT: N/A	
1.0 CAUSE(S): 1.1 Any one of the following: A. Trouble in any of the following zones: 1. Zones 1 - 20, Manual Fire Alarm Stations 2. Zone 21, Aux Trouble 3. Zones 21 - 40, Wet Pipe Sprinklers 4. Zones 41 - 59, Air & Water Oper. Deluge 5. Zones 61 - 76, Smoke & Fire Detection 6. Zones 84 - 96, Smoke & Fire Detection 7. Zones 101 - 106, Charcoal Filters Fire Det & Deluge 8. Zones 118 - 120, Swgr Rooms, Elect. Pen Area Fire Det & Deluge 9. Zones 121 - 136, Smoke & Fire Detection 10. Zones 140 - 156, Smoke & Fire Detection 11. Unit 1 Fire Prot Relay Panel 1098-1 B. Loss of AC to Audible Alarm Coders C. Loss of AC to Gate Valves Closed Position Indication (Continued)	
Page 1 of 2	A-47

2.0 **AUTOMATIC ACTION:**

2.1 None

3.0 **OPERATOR ACTIONS:**

3.1 **NOTIFY** Emergency Services Department to assist in determining cause of alarm.

3.2 Send an Operator to **CHECK** status of the following:

- ◆ 11MAC-18S, FIRE PROTECTION SYSTEM ALARMS
- ◆ 11MAC-23S, 1FP6 R 923-1 FIRE PROTECTION CABINETS
- ◆ 12MAC-20S, SWGR RMS & ELECT PEN FIRE PROTECTION

3.3 **REFER** to S1.OP-AB.FP-0001(Q), Fire Protection System Malfunction.

ALARM

48

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DEVICES:

SETPOINT:

SPARE

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References: Dwg.

OVERHEAD ANNUNCIATORS WINDOW A

REFERENCES1.0 Plant Documents:

- ◆ Technical Specifications Unit 1
- ◆ Technical Specification Amendment 190
- ◆ Unit 2 Technical Specification 3.7.6.a
- ◆ Event Classification Guide

2.0 Reference Drawings:

- ◆ 203750, Unit 1 Fire Prot, Fire Alarm Sys Zone and Code Assignments
- ◆ 203752, No. 1 & 2 Units, Fire Alarm System Power
- ◆ 203753, No. 1 & 2 Units, Fire Alarm System Alarms
- ◆ 203776, No. 1 & 2 Units, Fire Pumps Diesel Engine Control and Dual Battery Charger
- ◆ 211025, No. 1 & 2 Units, Loose Parts Monitoring System
- ◆ 211368, No. 1 & 2 Units, Computer Invertor
- ◆ 211370, No. 1 Unit, 115V Control System
- ◆ 211631, No. 1 Unit, No. 1A, 1B, & 1C Vital Buses SEC System
- ◆ 217150, No. 1 & 2 Units, Hot Shutdown Station Panel 213
- ◆ 218829, No. 1 & 2 Units, NIS Overpower Recs and Chs on Test
- ◆ 219398, No. 1 & 2 Units, Seismic Sensing and Recording System
- ◆ 220025, No. 1 & 2 Units, Rx Prot & Process Cont Sys Safety Injection Interconnects
- ◆ 220026, No. 1 & 2 Units, Rx Prot & Process Cont Sys Safety Injection Interconnects
- ◆ 220104, No. 1 & 2 Units, Rx Prot Ch I Rack 4
- ◆ 220009, No. 1 & 2 Units, Rx Prot Ch II Rack 9
- ◆ 220112, No. 1 & 2 Units, Rx Prot Ch III Rack 12
- ◆ 220115, No. 1 & 2 Units, Rx Prot Ch IV Rack 15
- ◆ 220475, No. 1 & 2 Units, CR Area Aux Ann Sys Ctrl Logic Cab 133
- ◆ 222891, No. 1 Unit, RMS High Radiation Alarms (Sheet 2)
- ◆ 222892, No. 1 Unit, RMS High Radiation Alarms (Sheet 5)
- ◆ 222893, No. 1 Unit, RMS High Radiation Alarms (Sheet 4)
- ◆ 222895, No. 1 Unit, RMS High Radiation Alarms (Sheet 3)
- ◆ 226066, No. 1 & 2 Units, Rod Control Sys, RPI Schematic
- ◆ 231413, No. 1 & 2 Units, Main Steam Hi and Low Ambient Temperature Alarm.
- ◆ 231926, No. 1 & 2 Units, DFO Pump Rms & Tank Rooms
- ◆ 231929, No. 1 & 2 Units, CO₂ Sto Tk Refrigeration Controls
- ◆ 232011, No. 1 & 2 Units, SSPS Train A Output Test
- ◆ 232022, No. 1 & 2 Units, SSPS Train A & B Trouble Alarms
- ◆ 232412, No. 1 & 2 Units, SSPS Train B Output Test
- ◆ 224344, No. 1 Unit, Control Area Computer Equip Interconnect
- ◆ 236266, No. 1 & 2 Units, SEC Schematic
- ◆ 240133, No. 1 & 2 Units, Rx Prot Trn A Safeguard Output Relays
- ◆ 240271, No. 1 & 2 Units, Rx Prot Trn B Safeguard Output Relays
- ◆ 242815, No. 1 Unit, RMS High Radiation Alarms
- ◆ 232976, No. 1 Unit, Cont Area Annunciator Sys - Power Distribution
- ◆ 232977, No. 1 Unit, Cont Area Annunciator Sys - SER Arrangement
- ◆ 232978, No. 1 Unit, Cont Area Annunciator Sys - OHA A, B, C, D, E, and G

- ◆ 232979, No. 1 Unit, Cont Area Annunciator Sys - OHA H, J, K, and F
- ◆ 232980, No. 1 Unit, Cont Area Annunciator Sys - CGA Alarms and Op Seq
- ◆ 222575, No. 1 Unit, Cont Area Ann Cab 124 Front View
- ◆ 222576, No. 1 Unit, Cont Area Ann Cabinet 124 Rear View
- ◆ 222576, No. 1 Unit, Cont Area Ann Cabinet 124 Rear View
- ◆ 222577, No. 1 Unit, Cont Area Ann Cab 118 Front View
- ◆ 222578, No. 1 Unit, Cont Area Ann Cabinet 118 Rear View
- ◆ 222579, No. 1 Unit, Cont Area Ann Cab 117 Front View
- ◆ 222580, No. 1 Unit, Cont Area Ann Cabinet 117 Rear View
- ◆ 222581, No. 1 Unit, Cont Area Ann Cab 116 Rear View
- ◆ 222582, No. 1 Unit, Cont Area Ann Cab 116 Front View
- ◆ 222759, No. 1 Unit, Cont Area Ann Cabinet 73 Front View
- ◆ 222760, No. 1 Unit, Cont Area Ann Cabinet 73 Rear View
- ◆ 222761, No. 1 Unit, Cont Area Ann Cabinet 72 Front View
- ◆ 222762, No. 1 Unit, Cont Area Ann Cabinet 72 Rear View
- ◆ 222763, No. 1 Unit, Cont Area Ann Cab 115 Front View
- ◆ 222764, No. 1 Unit, Cont Area Ann Cabinet 115 Rear View
- ◆ 618617, No. 1 Unit, Control Area Radiation Monitoring System 1R1B
- ◆ 618620, No. 2 Unit, Control Area Radiation Monitoring System 2R1B

3.0 PSBPs:

- ◆ 309001, AMSAC Technical Manual
- ◆ 314223, Beta Operating Instruction Manual

4.0 Procedures:

- ◆ S1.OP-AB.FIRE-0001(Q), Control Room Fire Response
- ◆ SC.OP-AB.ZZ-0004(Q), Earthquake
- ◆ SC.FP-TLFS-0001(Q), Filling Salem Station CO2 Storage Tanks
- ◆ SC.MD-CM.SEC-0001(Q), Safeguard Equipment Control Troubleshooting
- ◆ SC.OP-DL.ZZ-0010(Q), Control Room Instrumentation and Alarms
- ◆ SC.OP-SO.COM-0001(Q), Bootstrapping the Computer
- ◆ SC.OP-SO.COM-0002(Q), Start/Stop Sequence For the Computer
- ◆ S1.OP-AB.ANN-0001(Q), Loss of Overhead Annunciator System
- ◆ S1.OP-AB.FP-0001(Q), Fire Protection System Malfunction
- ◆ S1.OP-AB.RAD-0001(Q), Abnormal Radiation
- ◆ S1.OP-AB.SG-0001(Q), Steam Generator Tube Leak
- ◆ S1.OP-AR.ZZ-0014(Z), Auxiliary Annunciator
- ◆ S2.OP-AR.ZZ-0018(Q), Auxiliary Annunciator
- ◆ S1.OP-DL.ZZ-0001, Control Room Logs
- ◆ S1.OP-DL.ZZ-0003, Control Room Readings Modes 1-4
- ◆ S1.OP-SO.ANN-0001(Q), Overhead Annunciator Operations
- ◆ S1.OP-SO.CAV-0001(Q), Control Area Ventilation Operation
- ◆ S1.OP-SO.DGV-0001(Q), Diesel Generator Area Ventilation Operation
- ◆ S1.OP-SO.PC-0001(Q), Switchgear and Penetration Areas Ventilation Operation
- ◆ S1.OP-SO.RC-0002(Q), Operation of the Metal Impact Monitoring System
- ◆ S1.OP-SO.RM-0001(Q), Radiation Monitoring Systems Operations
- ◆ S1.OP-ST.NIS-0001(Q), Power Distribution - Axial Flux Difference
- ◆ S2.OP-AB.RAD-0001(Q), Abnormal Radiation.
- ◆ S2.OP-SO.CAV-0001(Q), Control Area Ventilation Operation

5.0 **Other:**

- ◆ DCP 1EC-3262, Removal of Rad Monitor R32B
- ◆ DCP 1EC-3308, Overhead Annunciator Modification
- ◆ DCP 1EC-3430, AAS Pt 919, Cntmt. APD Loss of Flow Path/1VC7-14 Off Pos.
- ◆ DCP 1EC-3505, Control Room Ventilation Modification
- ◆ DCP 1EC-3577, Annunciator Verification System
- ◆ DCP 1EC-3577, MCR-26, Use of the Manual SER Failover Key
- ◆ DCP 1EC-3389, P250 Plant Computer Replacement - Computer Installation
- ◆ DCP 1EC-3458, DORIC Replacement
- ◆ DCP 1EC-3652, MSR Control Logic Upgrade
- ◆ DCP 1EC-3522, N16 Main Steam Line Radiation Monitors (1R53A-D)
- ◆ DCP 1EC-3733, Auxiliary Annunciator System Replacement Project
- ◆ DCP 1EE-0388, Main Control Room Overhead Annunciator Modifications
- ◆ DCP 80010287, 1.4% Core Thermal Power Uprate.
- ◆ S-C-ANN-ECS-0114, Unit 1 Overhead Annunciator System Software Configuration
- ◆ NSO SOI 88-059-01, Review of Auto Test Feature Ckt Response Procedures
- ◆ NSO INCI 90-431, CO₂ Tank Low pressure
- ◆ INPO SOER 82-12R02, Loose Parts Monitoring System
- ◆ Safety Evaluation by the Office of NRR for Exemption Amendment to Appendix R, Item III.G.2, Requirements for Containment Fire Areas, Dated Nov 14, 1990
- ◆ Engineering Deficiency DES 91-00737 on Pen Area Hi Temp Alarm setpoint (A-14/22)
- ◆ C0561, Corrective Actions to LER 311/94-011-00 - Valid SEC Input.
- ◆ C0661, BPCA-1; BP 960927100
- ◆ 10CFR100, App. A, Section V(2)
- ◆ Engineering Memo #94-172, 9/29/94, (Summary Of Various SEC Indications - from Revision Request R09187)
- ◆ T-Mod 97-008, Temporary Westronics Series 3000 Recorder Usage Supporting P250 Replacement Outage
- ◆ PIR 00970901134, Failure to Update Alarm Procedure S1.OP-AR.ZZ-0001, Overhead Annunciators Window A
- ◆ DCP 80005321, U/1 RMS Upgrade - Pilot
- ◆ DCP 80005242, Containment Particulate 1-R11A, Iodine 1-R11B, and Gas 1-R12A
- ◆ DCP 80019351, RMS Upgrade
- ◆ DCP 80045600, Salem Unit 1 Condenser Air Ejector Radiation Monitor 1R15 Upgrade
- ◆ DCP 80050284, Salem Unit 1 PT-505/506 Pressure Tap Relocation
- ◆ DCP 80033816, Salem Unit 1 Control Bank "D" ARPI upgrade
- ◆ DCP 80083252, Operate NARPI In The Inhibit Position
- ◆ DCP 80089441, Fire Protection - CO2 System changeover to Sprinkler System